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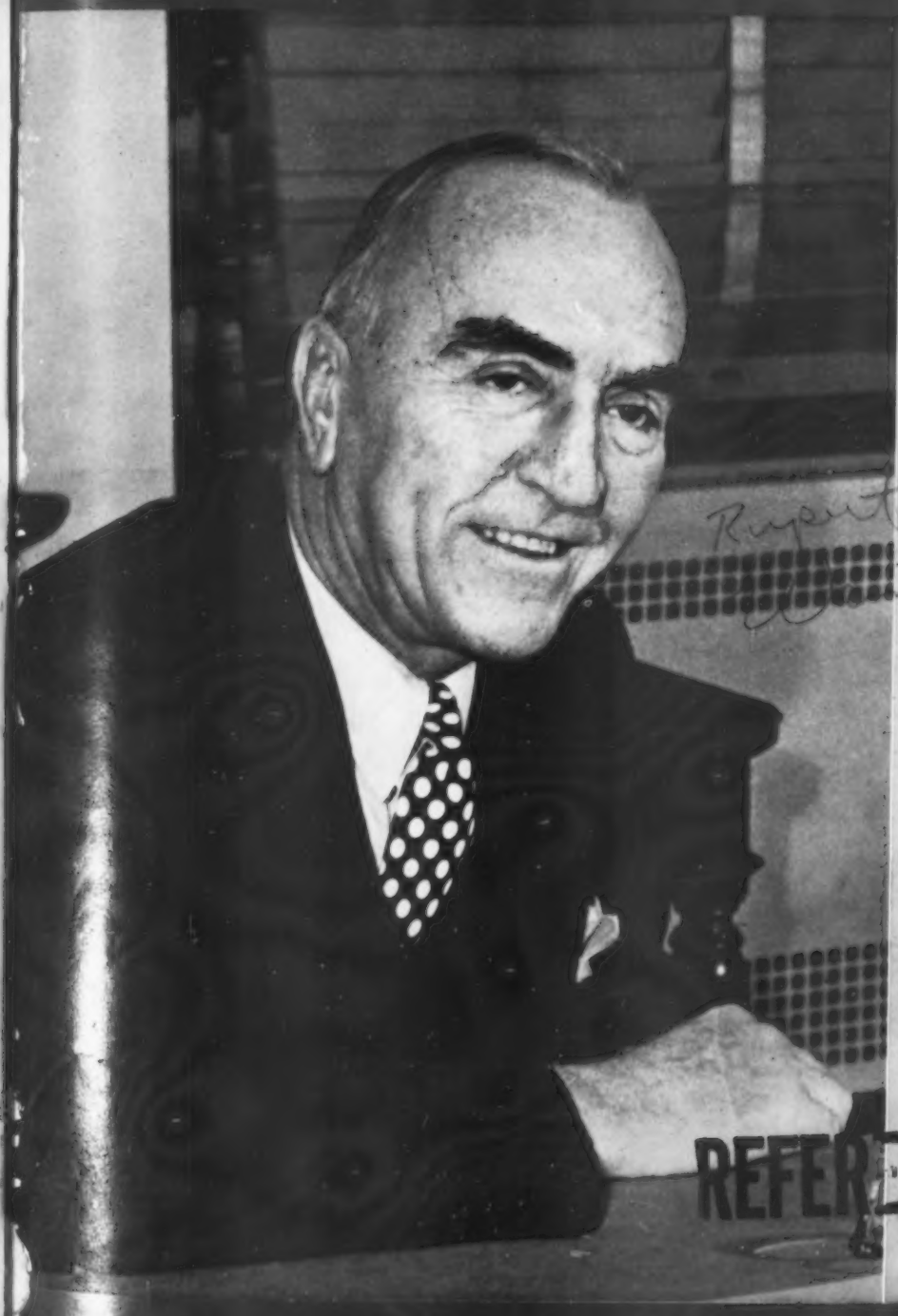

MAY 25

1953

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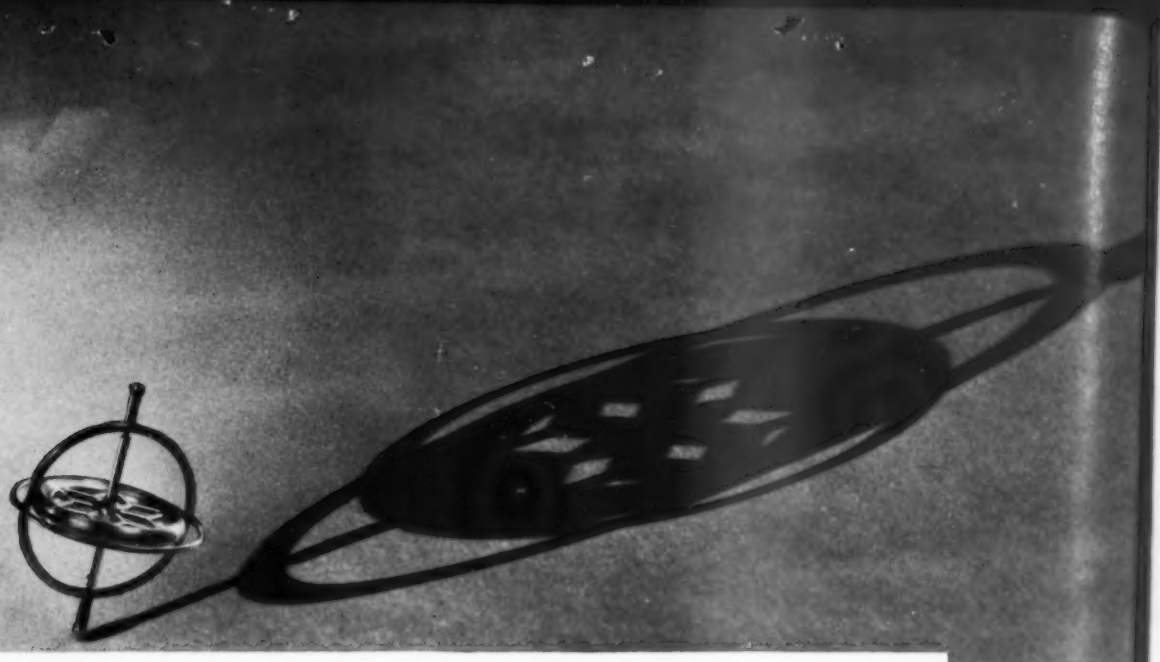

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Here's how Air Force procurement looks for the next fiscal year, starting July 1, under the new budget:

Strategic Air Command will get almost everything it has asked. B-52 goes ahead. B-47 will be cut little, if any.

Interceptors continue to get top consideration.

There may be a stretchout in tactical aircraft.

There'll be a drop in helicopter procurement.

Transport types will receive major blow. Douglas and Lockheed will be affected. Even Chase's C-123 (95% tooled up for production) will be cut deeply, perhaps to pilot-line output.

A few projects under way in other services may be dropped, such as B-66, which has counterpart in Navy (A3D).

In fields other than procurement, research and development will be reduced somewhat. Big concern here isn't the current cut, but what comes later.

AF personnel won't be decreased, at least in manpower needed for 120 wings. Under Defense Secretary Wilson's original program, there were to be successive personnel cutbacks. New plan is a victory for AF Secretary Harold Talbott.

•

Joint contracting system, to reduce duplication, is said to be receiving consideration in Defense Department. Idea would be for whichever service (Air Force or Navy) has the most business with a company to take over the whole job at that company.

Both services now have large staffs at major plants. Joint representation would cut them considerably.

Idea might also be extended to subcontractors, provided the bulk of a subcontractor's business was with the same service.

•

There's talk that the White House may try to extend excess profits tax past June 30 because of the still-unbalanced budget. Move would require new legislation, would face certain opposition in Congress. Rep. Daniel A. Reed (R., N. Y.), whose powerful Ways and Means Committee would consider legislation, has been strong advocate of tax reduction.

Extension of EPT would be hard on aircraft manufacturers, almost all of whom paid it in 1952. EPT, plus renegotiation and other factors, has contributed to uncertainties, and low rates of return. Airlines, on the other hand, wouldn't be hit so hard. Relatively few paid the tax last year.

•

New German airline, which expects to start operations in spring of 1954, will be in the driver's seat as far as routes are concerned.

Carriers of several other nations have built up substantial traffic in and out of Germany. But when a treaty is signed, Germany and its airline will want to negotiate—and unless agreement is reached with an individual nation on routes, that country's German rights expire. Alternative is for other nations to sign up or get out. Thus, German airline stands to get many of the routes it wants.

•

Airlines will be watching Post Office Department closely during the next few months. New Republican leadership in PO has now revealed its position: it wants to economize, wants CAB to take over subsidy payments, believes helicopter mail service can be "materially curtailed," thinks it should be allowed to "negotiate" its purchases of air transportation.

Encouraging sign is that PO officials say privately that they're "willing and anxious" to talk over all possible moves with the carriers. Joint conferences are a certainty.

The Washington View

The Main Event

Washington today has all the aspects of an arena where the preliminaries have just been finished and the main event announced. The fight coming on is to be a big one—military spending versus economic stability—with sides being taken down party lines.

For the first time a serious split has developed between President Eisenhower and the Democrats, and it's over his drastically reduced "defensive" military budget. The issue is drawn on the argument that the President is endangering the nation's safety.

Although apparent that the White House strongly supports the budget recommendations of Defense Secretary Charles E. Wilson and particularly the proposed $5.1 billion cut in Air Force funds, Democratic criticism was voiced immediately with responsibility placed squarely on the President. In some quarters, such outcries raise the question of whether or not the opposition is sincere or political

Seemingly Senator Taft, the majority floor leader, and other big Air Force advocates among the Republicans have been satisfied that the reduced arms program is safe from a security standpoint. Some of the even more economy-minded Republican members of Congress contend the cuts don't go far enough.

On the other hand, the Democratic critics charge that cuts already proposed are too deep. They claim a risk of "too big a gamble" and "national suicide." Senator Stuart Symington (D., Mo.), former Air Force Secretary, questions the military strategy of more stretch-outs. The President, he said is making an "incredible reduction in our own air strength, while there is no evidence the Russians plan any stretch-out."

These Democrats though, privately concede that they feel the Congress will accept the Administration's program. Consequently, it could be said a great deal of their protestations are being made with an eye toward the 1954 elections and the national elections in 1956. Capturing control of the House in 1954 is the immediate aim—the White House two years later. Senator Symington, for example, is considered to be a working candidate for the next Democratic presidential nomination.

Doldrums on Capitol Hill

The 83d Congress, having reached the midway point in its first session, has yet to enact any legislation of consequence affecting strictly aviation matters. Nor does it seem likely that any will appear before Congress adjourns in late summer. A great deal of the general legislation being passed does, of course, indirectly affect the aviation industry in varying degrees.

Of the many aviation measures now pending in committee, the only one with immediate prospects for consideration would permit the airlines to grant free or reduced-rate transportation to the clergy. This the airlines solidly oppose, as they do all special fare concessions to any group. The prevailing opinion is, however, that if the so-called "Preachers" bill gets out of committee, it will be passed on the floor.

Other bills seem destined to lay over in committee. They concern aircraft prototype legislation, jet and local service; civil airman's training; construction of heliports; and so on, including separation of subsidy from air mail pay.

The latter is definitely to be put aside. Its purpose will be accomplished by executive order under a reorganization plan the President is sending to Congress, which will transfer the function of paying airline subsidies from the Post Office Department to CAB.

Very Cool for May

Relations between the Defense Department's civilian officials, Secretary Charles Wilson, Deputy Secretary Roger Kyes, Air Force boss Harold Talbott, et al., and the press are becoming more and more strained.

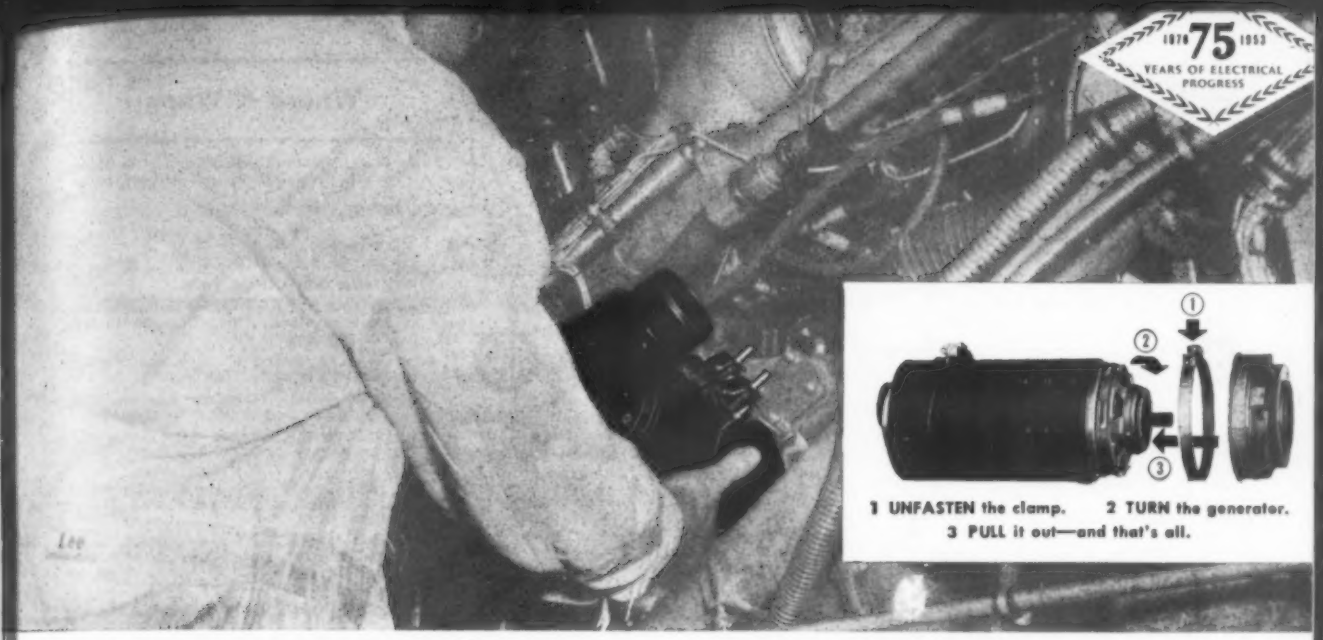
To say that the new Administration's Pentagon secretariat has been less than cordial in dealing with newsmen puts it mildly, according to members of the working press. On the few occasions when they have had press conferences, Wilson & Co. have done little more than be antagonistic, they claim.

According to Plan

The revamping of the Defense Department, scheduled to take effect in late June, under the President's Reorganization Plan No. 6 unless Congress forbids, is a good bet to go through. Veteran Hill observers predict smooth sailing for the "plan," which not only concentrates more power with the Defense Secretary but will also strengthen the hand of the JCS chairman.

At present, the head of JCS is little more than a panel moderator, while under Plan No. 6 he becomes the boss. The question of constitutionality which was raised in one or two quarters when the plan was first broached has not been taken seriously.

. . . Preble Staver



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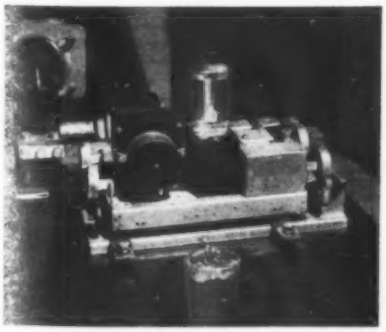

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OTHER PUBLICATIONS . . .

American Aviation Daily, a daily news service for the entire industry. $300 per year. Managing Editor: Keith Saunders.

American Aviation Directory; twice yearly listing of products, people and organizations. $7.50 each. Managing Editor: Marion E. Grambow.

Official Airline Guide: Monthly publication of airline schedules and fares. $11 per year in USA and countries belonging to Pan American Postal Union, including Spain and the Philippines. $12.50 elsewhere. Published from 139 N. Clark St., Chicago 2, Ill. Central 6-5804. Managing Editor: Robert Parrish.

American Aviation Traffic News (incorporating Air Tariff Reports): Daily rates and tariff news. $150 per year. Managing Editor: Wallace I. Longstreth.

Where & When

June 6—4th Annual Maintenance & Operations Clinic, Municipal Airport, Reading, Pa.

June 7-12—SAE, Summer Meeting, Ambassador & Ritz-Carlton Hotels, Atlantic City, N. J.

June 9-11—2nd Int'l Aviation Trade Show, Statler Hotel, New York.

June 11-13—5th Annual All-Woman Int'l Air Race, Welland, Ont., Canada, to New Smyrna Beach, Fla.

June 16—ATA Board of Directors Meeting, Carlton Hotel, Washington, D. C.

June 17-19—ADMA Mid-Year Meeting, Chateau Lake Louise, Alberta, Canada.

June 20—WNAA Banquet celebrating 25th anniversary Municipal Airport, Tulsa, Okla.

June 22-26—American Society for Engineering Education, Univ. of Florida, Gainsville.

June 29-July 2—ASME Semi-Annual Meeting, Statler Hotel, Los Angeles, including Air Cargo & Heavy Press for Light Metals Sessions.

July 1-3—University Aviation Assn., Summer Conference, National College of Education, Evanston, Ill.

July 3-7—7th All-Woman Transcontinental Air Race (sponsored by 99's).

July 9-12—6th Annual Aviation Exposition, Detroit Wayne-Major Airport, sponsored by Aero Club of Michigan.

July 15-16—IAS Annual Summer Meeting & Honors Night Dinner, IAS Building, Los Angeles.

Aug. 19-21—Western Electronics Show & Convention, Municipal Auditorium, San Francisco. Sponsored by IRE 7th Region and WCEMA.

Aug. 20-23—Air Force Assn., 7th Annual National Convention, Statler Hotel, Washington, D. C.

Sept. 5-7—National Aircraft Show & 50th Anniversary of Powered Flight, Dayton, Ohio.

Sept. 21-23—Instrument Society of America, 8th National Instrument Conference & Exhibit, Chicago.

Sept. 27-29—Int'l Northwest Aviation Council, 17th Annual Conference, Gearhart, Oregon.

Sept. 29-Oct. 1—Aircraft Spark Plug & Ignition Conf., Champion Spark Plug Co., Toledo, Ohio.

Sept. 29-Oct. 3—SAE, Aeronautic Meeting & Aircraft Engineering Display, & Aircraft Production, Hotel Statler, Los Angeles.

Sept. 30-Oct. 1—AIEE, Aircraft Electric Equipment Conference, Seattle.

INTERNATIONAL

May 14-22—Federation Aeronautique Internationale Conference, Scheveningen, Holland.

June 16—ICAO Assembly, Brighton, England.

June 26-July 5—Int'l Aircraft Engineering Convention, Paris; and Int'l Aircraft Show, Le Bourget Airport, Paris, sponsored by French Aircraft Industries Association.

July 12-19—2nd Int'l Air Show, San Nicole Airport, Venice, Italy.

Aug. 25—ICAO Legal Committee, Rio de Janeiro.

Sept. 7-13—SBAC Aircraft Show & Flying Display, Farnborough, England.

Sept. 7-18—IAS-RAeS, 4th Int'l Conference, London, England.

Oct. 5-10—IATA Annual Assembly, Montreal, Canada.

Oct. 10—International Air Race, England to Christchurch, N. Z.

Nov. 1-22—IATA, Traffic Conferences, Honolulu.

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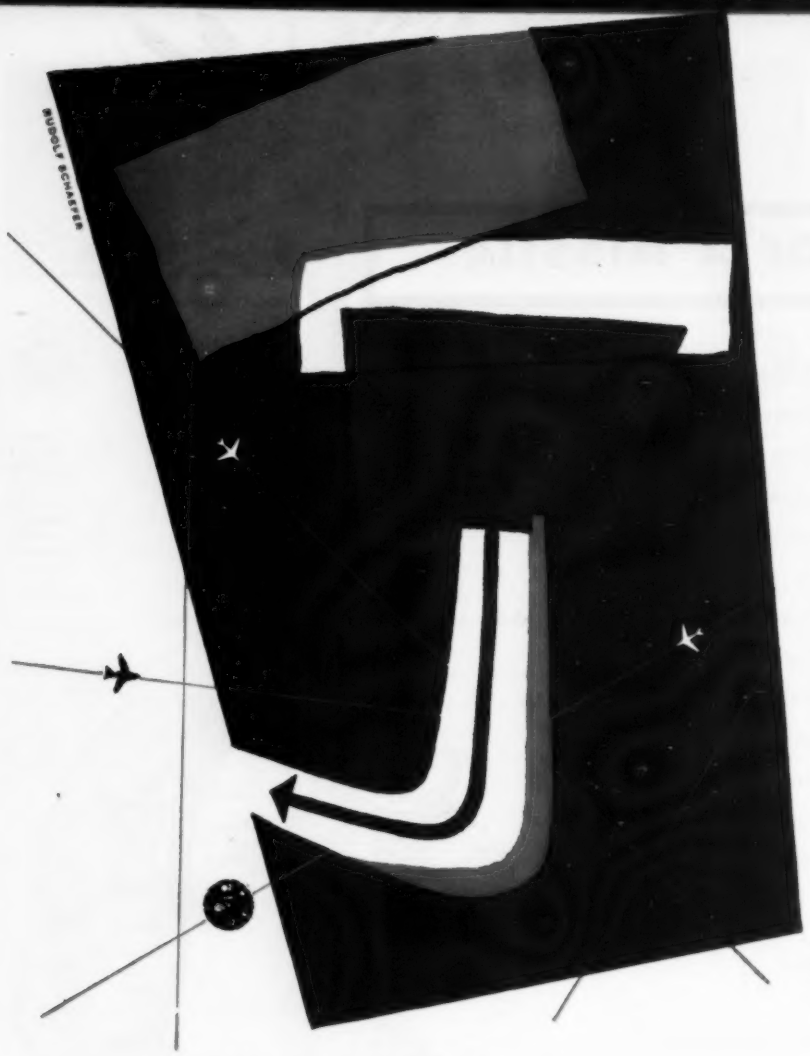

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Letters

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RYAN PERFORMANCE

To the Editor:

In the article on Ryan's Model 59 Jet Trainer appearing on page 34 in your March 30th issue, some errors in performance information have been noted and we thought in the interest of accuracy they should be called to the attention of your readers.

The errors are understandable since the Allison 520-C1 engine was quoted twice in performance information, both with and without two 100-gallon tip tanks. Unfortunately, the figures quoted by AMERICAN AVIATION in several instances were with the tip tanks installed, resulting in performance figures somewhat less than the maximum obtainable without the greater weight of the additional fuel.

Here are the correct performance figures for the Ryan Model 59 powered by the 520-C1 Allison engine in the version without tip tanks:

- **Maximum speed** at sea level—370 knots TAS (359 knots with tanks);
- **Maximum speed** at 35,000 feet—379 knots TAS;
- **Service ceiling**—42,700 feet (instead of 40,500 feet);
- **Initial rate of climb**—4100 feet per minute, instead of 3120 feet per minute with the two tip tanks.

WILLIAM WAGNER
Public Relations Manager
Ryan Aeronautical Company
San Diego, California

NEVER SAY NAY

To The Editor:

Your editorial in the March 16 issue of AMERICAN AVIATION titled "Daydreaming at Collier's" (commenting on Frank Tinsley's article on helicopters in the February 14 issue of *Collier's* magazine) has naturally attracted the attention of our industry.

In general, I would like to say that basically you express the considered opinion and policy of the helicopter industry as represented by the Helicopter Council of the Aircraft Industries Association. I address this letter, as you will note, as chairman of this particular group.

On numerous occasions the question you point up has been discussed at length during the Council meetings. As a group we are definitely opposed to "day-dreaming" of any type regarding the logical development and public acceptance of the helicopter. This we know will come in due time, as the helicopter is a vehicle completely qualified to point to its own performance as a sure indication of its potentiality. I am sure you will agree with me that the performance to date, both in civil and military operations, leaves little question as to the helicopter's ultimate place in the transportation field.

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Editorial

Gamble—or Sense?

WHAT YOU THINK of the new Air Force budget depends largely on what you think the strength of U. S. air power needs to be *now* and whether you think AF strength should be at maximum by a certain target date.

It is obvious that the latest target date set by the Joint Chiefs of Staff, by which time the U. S. should be prepared to meet an attack from the outside, has now been shelved, postponed, or abandoned.

by W. W. P.

If you agree with this policy of abandonment, the new AF budget makes a lot of sense. If you disagree, i.e., if you believe this country should push at top speed *now* to attain maximum strength—regardless of cost—then the new AF budget is a bitter blow and the country is gambling its future recklessly.

It's just about as simple as that.

We won't reach the goal of 143 AF wings by June 30, 1954, the initial target date. We won't even reach that strength by December 31, 1955, the latest Truman date. We will now be geared to reach 120 AF wings by mid-1956. Is this enough? Is there time? It is obvious that the Eisenhower Administration thinks so. We are inclined to go along—with reservations.

There are two important things to remember. One is that *speed* in building up air strength is tremendously costly. If the danger is real, cost is not a consideration. Thus the Eisenhower Administration is gambling that speed is not of the essence at the moment. Secondly, it is equally important to know that the major cut-backs affect carrier wings, that the number of combat wings remains pretty high, and that even if we had attained the full 143-wing strength by 1954 or 1955, there is *no guarantee* that those wings would have been really modern and effective.

The original program was developed in haste. Haste is waste even though it's essential in the face of real danger. If the heat is off, a more reasoned review is in order.

There is another important thing to look at before drawing conclusions about the effect of the AF budget cuts. The new Administration is trying to return the nation's fiscal policy to a cash basis. During the recent Truman years vast sums were appropriated for most Government departments for use in programming for the future. These are called carryover funds, i.e., funds which have been obligated or committed, but not actually spent. The effect of this on the nation's fiscal policy has been serious, although in aircraft procurement there must be a sizeable measure of advance authorizations.

Now look at the picture as it pertains to the Air Force. During the present fiscal year ending June 30, the AF is spending $4.3 billion. It is now proposed that the AF actually spend $6.3 billion in the fiscal year starting July 1. At the end of that year, i.e., by June 30, 1954, the AF will still have $16.9 billion remaining in carryover funds which it will have largely committed in contracts but not actually spent.

Significantly, the Eisenhower plan for spending in the new fiscal year starting July 1 is only $700 million less than the Truman proposal. This gap cannot be considered as catastrophic.

To have spent $4.3 billion this year and to have $23 billion on hand starting July 1 means simply that never in any period of U. S. history outside of actual world wars has there been so much money available for air power as is now the case.

Now look at the aircraft industry. The stretchout will hurt in many cases, but not critically as far as the *basic* aircraft industry is concerned. Many second sources of supply will be eliminated. Adjustments in delivery schedules will adversely affect many suppliers. *But in the overall the basic aircraft industry seems assured of more business for a longer period than had ever been dreamed of in a non-world-war period.* This is encouraging and healthy *if* you believe that the nation does not face a surprise atomic attack from the outside in the next few years.

There are those in the manufacturing industry who will protest the stretchouts. But through its 35-year history the aircraft industry has suffered severely from the sharp ups and downs of war-time build-ups and disastrous collapses thereafter. The outlook now is for every basic engineering and development and primary production unit in the country to be kept busy even if not at an emergency build-up rate. It could be far, far worse.

The new Air Force command intends to review every project. New justifications will be required. This makes sense for the simple reason that when the initial program was drawn up there was a lot included that didn't really make sense. We still have a considerable number of reservations about the position of air power in the overall defense picture, but the overall outlook is neither as bleak nor as disastrous as it may be portrayed by hasty judgments. That is, if the decision of the Eisenhower Administration to remove a specific target date proves correct.

An "Old Shoe" Fits

The nomination of General Nathan F. Twining for a two-year term as Chief of Staff of the USAF meets with widespread approval. So also does the nomination of able Lt. Gen. Thomas D. White as vice chief.

Quiet, sound, conservative, General Twining has described himself as being "just a plain old shoe." He fits perfectly into the complex Pentagon picture, where a change of pace is indicated. He is not an aggressive type, but he can hold his own and he has absorbed a great deal in his long service. He's more of a listener than a talker. He's the best choice that could have been made.

General White is a comer. An executive type with broad perspective and a promising future, he makes a capable team-mate under Twining. Industry can have confidence in these two men.

The nominations relieve an extended period of tension and uncertainty within both the Air Force and industry. For all of his many good qualities, General Hoyt Vandenberg, the retiring Chief of Staff, will not go down in history books as an outstanding leader. It is doubtful if he really ever fully understood the broad Air Force policies, functions, and activities, although on occasions, especially in Congress, he could be impressively persuasive.

But the Air Force relations with industry never dropped to a lower level than under Vandenberg. Rarely, if ever, did he endeavor to listen to industry problems or give industry a chance to speak its piece. Under the Vandenberg regime it has been unbelievably difficult for a manufacturer to improve his own product. Brilliant as he is in many ways, Vandenberg would have fit much more suitably as the head of West Point or some such post in which the social graces of the drawing room or a de luxe swimming pool are an important requirement.

The transition from bored detachment to a working team in the Pentagon should produce sound results for both Air Force and industry. Both attitudes and procedures need changing and the civilian team on top has already made some progress. With Generals Twining and White in command, the Talbott-Twining combine ought to function well.

Upheaval in CAA

The Civil Aeronautics Administration is getting its first major reorganization since its creation in 1938.

The upheaval is much more far-reaching than the mere appointment of a new administrator and the consolidation of seven domestic regions into four. In a sense it marks the closing of an era during which the CAA and its predecessor Bureau of Air Commerce were promotional agencies stimulating the building of airports, encouraging private flying, and conducting air education programs in the growing years of civil aviation. Virtually all such promotional activities are being eliminated.

There will be many who disagree sharply with the new plans. Some good men are bound to be hurt. Others will leave CAA in protest. But scarcely anyone will argue the main point that CAA was due for a major reshuffling and it stands to reason that no reorganization could be undertaken to everyone's satisfaction.

The new administrator, Fred B. Lee, is the best choice that could have been made at this time. He has the strong backing of the Commerce Department in embarking upon a thankless task of effecting economies.

We hope, however, that the effort to effect $1.5 millions in savings annually will not deflect the new CAA in a drive for more common-sense efficiency and a more conciliatory attitude toward industry. Mere savings are not enough.

It is heartening to know that the federal airways system will be strengthened rather than weakened. The "forgotten men" of civil aviation have been the airway controllers and it's time they got a break commensurate with their heavy responsibilities.

CAA's promotional efforts can well be dispensed with for the time being. The airport division which became a political hacksaw, needs a thorough review and housecleaning, but there are some excellent men in airports who should be saved. The major concern we have to date is in aviation safety, where a 30% cut in personnel should be considered essential. The mis-named safety division is the most susceptible of being re-worked and re-organized and slimmed down.

Back in the regime of CAA Administrator T. P. Wright a group of youngsters just out of college—called "the boys from Syracuse"—came into CAA to bring about a more businesslike administration. These lads have become well entrenched in CAA and imbued with paper work and detailed procedures. Mr. Lee's major worry should be that these non-aviation business administrators don't subordinate and overwhelm the good CAA technical personnel. The "boys from Syracuse" have added a great deal of red tape that can be bounced out the window.

Due to Eisenhower Administration orders to economize, if for no other reason, the Commerce Department is exerting a stern control over CAA, more so than at any time in some years. Whether this is to the good or bad remains to be seen, but for the present CAA must take orders on budget cuts from the Department. CAA will find the going pretty rough for a while, but the operation now in process, painful as it may be to some, has been inevitable. And in the views of many in industry, it's been long overdue.

Army Helps the FBO

There are encouraging signs that the Army may implement with action its announced intentions of several years ago to utilize civilian fixed base operators for maintenance of Army aircraft. The Fifth Army recently signed a contract with A. R. Currey's Flying Service at Galesburg, Ill., to perform field maintenance for five types of aircraft currently being flown by the ground forces.

Utilization of civilian facilities is in line with economy moves to get more out of the defense dollar. For the Army to maintain all of its aircraft means establishing more bases and constantly training more mechanics. The Army admits, quite rightfully, that it can save money by using well equipped fixed base operators, and there are indications in Washington that the recent Fifth Army move is only one of a series of contracts to be awarded autonomously by the various Armies based in the continental United States.

Steps are now being taken by the Army to reduce contract procedures and paper work. Decentralization of contract awards had already been achieved. Naturally the Army will continue to handle its own day-to-day maintenance. Since the Air Force continues to be the procurement agency for the Army, overhauls will continue to be handled by the former, but in the meantime the spreading of field maintenance to local civilian firms is a healthy sign, especially in view of present plans by the Civil Air Patrol to have local operators maintain its airplanes.

. . . WAYNE W. PARRISH

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33% INCREASE IN CAPACITY...
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BY

TEMCO

CASE HISTORY: #811-117
CUSTOMER: AMERICAN FLYERS AIRLINE CORPORATION
SHIP: DC-3 N-33656

Precision overhaul at TEMCO-Greenville included 4000 hour inspection on outer wings; replacement of center section wing doubler and attach angle. Installation of Douglas air step kit to existing cargo door. Bolts replaced on attach angle with torque wrench to assure even tension under flight conditions. Same operation also applied to American Flyers DC-3 N-19922 (Case History #811-120):

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Herrol Bellomy, Gen. Supt., TEMCO Aircraft Corporation, Greenville Overhaul Division, P. O. Box 1056, Greenville, Texas.

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Industry Spotlight

CORPORATE aircraft users will probably get a chance to look over the de Havilland Mark II Heron this fall. The British firm is planning to send the new Heron to the U. S. after the Farnborough show for demonstrations. The Mark II is a retractable gear version, basically an enlarged Dove with four engines. About 75 Doves have already been sold in the U. S. and Mark I Heron orders total 50.

• •

A turboprop version of the Convair-Liner, prematurely dubbed the Convair 440 in Europe, is under study at San Diego. Convair, however, is still many months away from even talking about such a plane to interested airlines.

• •

Sikorsky's S-56 large transport helicopter will make its first flight as the Marine Corps HR2S near the end of 1953. Carrying about 30 passengers, it will be powered by two Pratt & Whitney R-2800's driving a single rotor. Another Sikorsky rotary-wing craft, the S-58 (an enlarged S-55), will use a Wright R-1820.

• •

Curtiss-Wright's J67 program apparently will be unaffected by problems encountered by Bristol with the Olympus in Britain. Bristol's top management has been told to get the Olympus straightened out or abandon it. C-W has extensively redesigned the Olympus and its tests have proved the J67 satisfactory so far.

• •

Britain's Folland F0-141 Gnat stripped-down fighter is being plagued by engine troubles. The Gnat was designed around a new Bristol engine which was discontinued even though parts production for 50 power plants had begun. Substitute engine may be an undersized Derwent now being developed by Rolls-Royce.

• •

Another stripped-down fighter (in addition to the USAF Lockheed F-104) has been ordered. The Bureau of Aeronautics has told Douglas to build a prototype XF5D-1, which will be a lightened version of the F4D delta-wing Skyray.

• •

Even though Boeing does not consider drag parachutes, used in its B-47 and the Lockheed F-94, suitable for commercial use, de Havilland soon will begin tests with tail chutes on its prototype Comet I to determine whether a similar installation in the forthcoming Comet III would be satisfactory as an emergency deceleration device. The Comet trial installation will be placed in the tail cone, and cannot be detected externally.

• •

France's SNECMA has been testing a reverse thrust device for jets on a Vampire for 10 months. The French unit, which can be used either with or without an afterburner, reportedly will stop a jet without the use of brakes in less distance than a brake-only deceleration.

• •

Future of Canadair's CL-21 transport hinges on whether military sponsorship can be found for the aircraft. Rising costs have pushed the original tentative selling price of $450,000 to a figure in the region of $600,000, well above what the market will bear. Moreover, without military sponsorship the total financing required would be about $30-35 million, based on a production run of 300 planes. At the 240th, plane costs would amount to $137 million with a resultant revenue of $137 million—in other words only after 240 units had been produced would the company begin to realize a return on investment.

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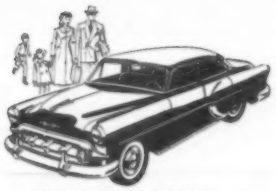

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They soon became standard equipment on Braniff's DC-3's, 4's, and 6's. And, of course, they're on the new Braniff Super Convair 340's. Twenty-three other airlines have also made B. F. Goodrich dimpled tires standard equipment—many on the basis of their own testing programs.

B. F. Goodrich is now producing the new dimpled tire in seven airline sizes. It's another first in aviation tires from B. F. Goodrich, leader in rubber research and engineering.

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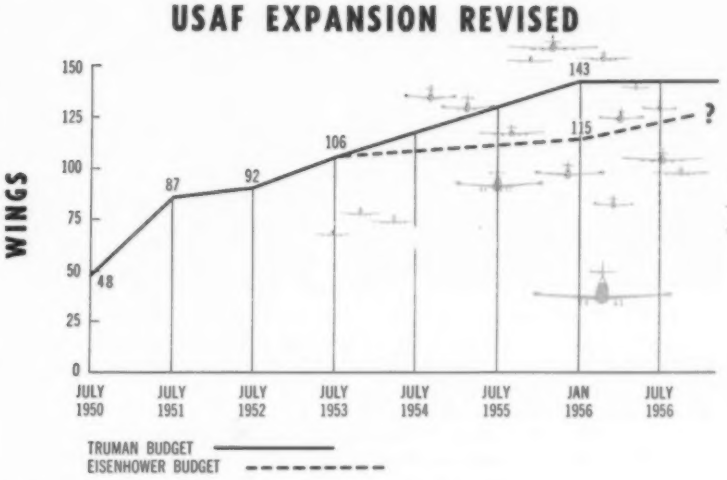


USAF GOAL is now 120 wings by mid-1956. 143-wing target is pushed farther into future.

How Air Power Cuts Will Affect Industry

Stretchouts, cutbacks expected; transport builders, second sources to feel the pinch first.

By Robert M. Loebelson

THE EISENHOWER Administration last week submitted its revised 1954 budget for the Defense Department and immediately stirred up a controversy as to whether or not the nation was cutting its air power defenses too much.

In reducing the Truman-proposed request for new money for the services during the year beginning July 1 from $41.[illegible] to $36.1 billion, the President lopped off a total of nearly $4 billion from Navy and Air Force money used to order additional airplanes. At the same time, however, Mr. Eisenhower showed he planned to cut Mr. Truman's spending in fiscal 1954 from $45.5 to $43.[illegible] billion.

In 1954, the Eisenhower budget indicated, the Air Force would pay out $6.3 billion for new airplanes and related equipment, compared with $7 billion programmed in the budget submitted by the former Chief Executive in January.

Defense Secretary Wilson said the budget revisions mean that the previous Air Force goal of 143 wings by January 1, 19[illegible], has been discarded and that the new "interim" goal is 120 wings by the middle of 1956. Moreover, where the Truman regime expected to have reached 133 wings by mid-1954, the new policy will mean only 114 wings ("substantially well equipped") by the same date. Ironically, mid-1954, the Joint Chiefs of Staff have stated, represents the date when the U. S. faces its greatest danger from Russia; before the stretch-out in January, 1952, the 143 wings were to have been reached by that time.

What will the proposed reductions mean to the aviation industry?

• **If past experience is followed,** most of the cuts will come from the 17 transport wings included in the 143-wing force. This means that the first cutbacks will probably be on Douglas C-118's, Lockheed C-121's, Chase C-123's, and Douglas C-124's. Fairchild C-119's probably will be continued because Hagerstown production is now just about enough to keep the plant going. Wilson and his colleagues are expected to insist that all prime airframe companies remain in production.

• **Under the previous Administration,** the current rate of 800 planes a month being delivered to the USAF was to have been continued to January, 1955, when the rate was to drop to 750. This tapering off was to continue to 500 a month in June, 1955, to 450 in January, 1956, and to 300 in June, 1956. The revised program will mean a slightly lengthened tapering off period. Current production will probably be continued for several months to modernize existing USAF wings.

• **More and more second-source** aircraft and engine producers will be phased out, leaving many prime aviation firms in a satisfactory position as far as their expected sales and profits are concerned in fiscal 1954. If the squeeze on basic aircraft builders gets tighter, they will probably call in the assembly and components work now farmed out to subcontractors.

• **Some "marginal" aircraft work** will probably be eliminated. The Defense Department, for example, has already wiped out the atomic-powered aircraft carrier and is "studying" the plans for construction of two atomic-powered bombers. If cancellations of these bombers follow, it will affect General Electric and Pratt & Whitney, which are building the engines, and Boeing and Consolidated Vultee, which are to produce the fuselages. Deputy Defense Secretary Roger M. Kyes is on record with his belief that private industry should be brought into the atomic energy development program, and that any time lost

What the Cuts Mean

● IN TERMS OF USAF GOALS

The buildup of USAF strength launched in 1950 called for a goal of 143 wings (126 combat, 17 carrier).

These 143 wings, after a stretchout announced in January, 1952, were to be completed by December 31, 1955.

The **new interim goal** is 120 wings by mid-1956. Buildup to 143 will take considerably longer than planned.

It is estimated that the USAF has reached 103-wing strength now. However, 10 of these wings had not yet received their planned combat aircraft on April 1.

The Truman-prepared budget, inherited by the Eisenhower administration, for the fiscal year 1954, which starts July 1, 1953, envisioned attainment of 133 AF wings by June 30, 1954.

The Eisenhower administration now proposes to lop 19 wings from this plan. It will complete 114 instead of 133 wings by June 30, 1954.

● IN TERMS OF USAF FUNDS

The USAF will have available, when it enters fiscal 1954 on July 1 of this year, considerable funds already appropriated and for which it has made commitments for aircraft and related procurement. These are called *carryover* funds. The total it has committed—but not actually spent—for all purposes is $28.5 billion, of which $19.7 billion is for aircraft procurement.

New AF money requested in the Eisenhower budget for fiscal 1954 is $11.7 billion for all purposes, as compared to Truman's $16.8 billion. Of this, $3.5 billion is aircraft procurement; Truman's was $6.7 billion.

This *new* procurement money—$3.5 billion—is added to the $19.7 procurement *carryover,* making a total of $23.2 billion available when fiscal 1954 opens on July 1.

However, new money differs from money the USAF *can spend* on procurement in fiscal 1954. Eisenhower proposes to *spend* $6.3 billion—only $700 million less than Truman's budget. This compares with $4.3 billion being spent in the current year ending June 30.

$6.3 billion is the important figure—not the $3.5 billion requested in new money (which was $3.2 billion less than Truman's request). Reason given for asking less new money is that the need for "advance financing" is reduced now that a "reasonable level" of plane production has been attained.

To sum up: USAF enters fiscal 1954 on July 1 this year with $23.2 billion available for procurement. It will spend $6.3 billion in this coming year. Thus, as fiscal 1955 opens on July 1, 1954, it will still have $16.9 billion available in procurement funds plus whatever new money is voted for that year.

● IN TERMS OF THE NAVY

New money for Navy aircraft procurement will total $1.1 billion as compared to Truman's $2 billion. During fiscal 1954, the Navy will operate about 9900 aircraft—about the same as the 16 carrier air wings now in service. The three Marine Corps air wings will continue untouched in fiscal 1954.

USAF Fiscal 1954 Budget

(In millions)

	Carryover From 1953	New Money Requests Ike	New Money Requests Truman	Spending Ike	Spending Truman
Aircraft procurement	$19,663	$3,495	$6,664	$6,300	$7,000
Other procurement	2,982	625	900	800	1,100
Construction	2,628	400	700	900	1,450
Maintenance & operations	1,855	3,200	4,235	3,200	3,750
Personnel requirements	349	3,300	3,560	3,250	3,475
Research & development	537	475	537	445	490
Reserve personnel	17	14.9	23	25	28
Air National Guard	93	147	128	100	137
Contingencies	5	31	31	30	31
Miscellaneous	345	....	10	50	9
TOTALS	**$28,475**	**$11,688**	**$16,788**	**$15,100**	**$17,470**

in eliminating Government-sponsored research work would be more than made up later by private industry. It is also highly probable that some of the 17 forging and extrusion presses in the USAF's heavy press program will be eliminated.

One little noted item in the revised defense budget is the retention of $500 million for the creation of standby machine tools and plants for use in case of emergency. First proposed by Mr. Truman as a result of the Office of Defense Mobilization Advisory Committee on Production Equipment's study, this program, according to ACPE chairman Harold S. Vance, president and chairman of Studebaker Corp., would enable the U. S. ultimately to cut its defense expenditures in half (AMERICAN AVIATION, February 16).

Standby Panacea

Defense Secretary Wilson indicated the half-billion down payment on a multi-billion dollar program had been retained in the Eisenhower budget but would not be spent without a "very careful study" of the mobilization base problem. The mere fact that it was kept while so much other money ($5.2 billion for the entire Defense Department, with $5.1 billion coming from the Air Force) was being eliminated indicates that Wilson and his cohorts feel the standby plant idea may be the panacea which would give the U. S. adequate protection without heavy defense expenditures. If the Vance proposal is "bought" by Wilson in its entirety, it may mean even greater reduction in air power in future years.

Another interesting point in the revised budget is the reduction in funds for USAF research and development. In the past, when there have been cutbacks in plane buying, there has generally been an increase in research and development funds to try to compensate for the missing planes by designing future ones which would be superior.

But that policy has not been carried forward in the new budget. Mr. Eisenhower has asked $62 million less than his predecessor ($537 vs. $475 million) in new funds for USAF research and development. At the same time, the budget shows, the USAF is destined to spend $45 million less on basic and advanced research during fiscal 1954 than Mr. Truman planned ($490 vs. $445 million).

Like the Air Force, the Navy has been substantially cut in its request for plane-buying money for fiscal 1954. About $834 million in aircraft procurement funds have been eliminated (out of $2.2 billion asked by Mr. Truman)

but Secretary Wilson said the Bureau of Aeronautics will continue to operate about 9900 planes in the coming fiscal year and the three Marine air wings will also be retained.

The Navy's existing 16 carrier air wings had been expected to be completely modernized at the same time the Air Force attained its 143-wing goal, but the reductions will stretch out attainment of the 16 modern wings as well.

Army aviation, on the other hand, which was down for $151 million in new money for the new fiscal year, has emerged virtually untouched in the revised budget, and consequently will be able to buy the lightplanes and helicopters planned.

The Administration, while conceding that the danger from Russia has not abated, is taking a calculated risk by reducing and stretching out previously planned air power goals. Many Congressional leaders, most of them on the Democratic side of the aisle, have already termed the President's budget "too big a gamble," "national suicide," and possibly "the last mistake we could ever make."

Air power advocates in the House and Senate, ranging from Sen. Taft to former Air Force Secretary Stuart Symington, are numerous, especially with the mistakes of one-time Defense Secretary Louis A. Johnson (who cut the Air Force from 70 to 48 wings before Korea) to guide them. But many of those air power proponents are also interested in "economy" and therefore may, despite their qualms, go along with the Eisenhower-Wilson scheme when the budget comes up for a vote this summer. • • •

Crary Retires from UAL; Johnson Succeeds Him

Harold Crary is retiring July 1 as United Air Lines' vice president of sales administration after 24 years' service, but will remain with the company for consulting and special projects.

After his retirement sales administration will come under the direction of R. E. Johnson, vice president and assistant to the president, who is also responsible for advertising, public relations, and related activities. Johnson has been with UAL almost 25 years. B. B. Gragg, sales director, will assume substantially enlarged responsibilities, reporting to Johnson.

In 1927 Crary organized and became the first manager of the American Air Transport Association in Chicago, a trade group of 20 airlines. Two years later he joined UAL and has been a vice president for 20 of his 24 years there.

Gen. Nathan F. Twining

Lt. Gen. Thomas D. White

Twining Succeeds Vandenberg in USAF

In the first change in the top hierarchy of the Air Force in five years, Gen. Nathan F. Twining, present Vice Chief of Staff, has been nominated for a two-year term as USAF Chief of Staff to succeed retiring Gen. Hoyt S. Vandenberg. Lt. Gen. Thomas D. White, now serving as Deputy Chief of Staff for Operations, has been designated vice chief with the rank of full general.

Both men will take over their new jobs after Vandenberg steps down on June 30. No opposition is expected.

Vandenberg, 54, became vice chief under Gen. Carl A. Spaatz when the USAF was made a separate service in September, 1947, and moved up to Chief of Staff in April, 1948, when Spaatz retired. His original four-year term was extended for 14 months a year ago.

In submitting his request for retirement, Vandenberg gave no reason, pointing out only that he will have had 34 years of military service when his term ends. Vandenberg underwent a serious abdominal operation last year. Air Force Secretary Harold E. Talbott accepted the resignation "with reluctance," paying tribute to Vandenberg for concentrating the USAF's "relatively meager resources" on strategic air power during the postwar years.

Both Twining, 55, and White, 51, are West Pointers.

The Vandenberg retirement is the first in a series of moves in which the four members of the Joint Chiefs of Staff will be replaced in a few months.

President Eisenhower has also selected Adm. Arthur W. Radford to be chairman of the JCS to replace Gen. Omar N. Bradley; Gen. Matthew B. Ridgway to be Army Chief of Staff, replacing Gen. J. Lawton Collins; and Adm. Robert B. Carney to be Chief of Naval Operations, replacing Adm. William M. Fechteler.

Radford, who is perhaps best known for his opposition to the B-36 in the so-called "revolt of the admirals" in 1948, and Ridgway, now Supreme Allied Commander in Europe, will take over when the terms of Bradley and Collins expire August 16. Fechteler's term does not expire until August 16, 1955, but the President's selection of Carney obviously means the switch will come well before that.

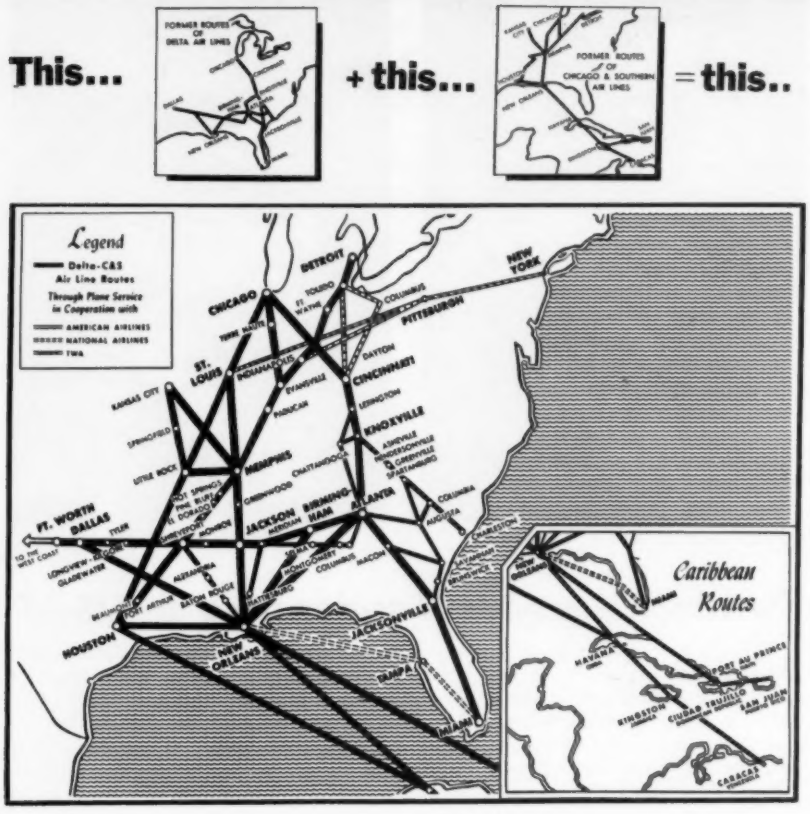
Sternberg Named Resort President

Walter Sternberg, vice president-sales of National Airlines for the past four years, has been named president of Resort Airlines, certificated air cruise operator, effective June 1. He will make his headquarters in Miami, at least for the present. C. F. Sharp, NAL's assistant vice president-sales, will assume Sternberg's duties.

Sternberg

Clinton Davidson Jr., who has been Resort's president and board chairman, retains the latter position.

Sternberg, well known throughout the industry, started with Eastern Air Lines in 1930. After serving as general traffic and sales manager, he joined American Airlines as assistant vice president-sales, and was instrumental in starting the family fare plan.



Delta-C&S: Now Fifth Largest Trunk

Advance planning pays off as 'Operation Merger' is completed without a hitch.

By Eric Bramley

AT 10:25 a.m. on May 1, one of the most smoothly executed mergers in airline history was completed as Delta Air Lines and Chicago & Southern Air Lines formally joined to form Delta-C&S Air Lines, the fifth largest domestic carrier based on revenue passenger-miles.

The new 9,508-mile domestic and international system, with headquarters in Atlanta, serves 55 U.S. cities plus six in the Caribbean, and employs 4,250 people. Domestically, it will be a subsidy-free network, saving the government over half a million dollars yearly as compared with the former separate operations of the two carriers.

The merged company (corporate name is Delta Air Lines Inc., but it will be known as Delta-C&S) started operating one year and two days after application for merger was first filed with the CAB, and four months after Board approval was obtained. Overwhelming stockholder approval was voted April 22.

Delta-C&S' president is C. E. Woolman, one of the industry's best known and best liked executives, who was Delta's operating head for 27 years. Carleton Putnam, founder and chairman of the board of C&S, is board chairman. Other officers were drawn from both companies (see photo). Most recently elected was James Cobb, former public relations and advertising director of Delta, who is now vice president-public relations.

So well had integration of employes, equipment, and operations been worked out that when "Operation Merger" was ordered into effect on May 1, the changeover was made without a hitch.

Operation Merger, an eight-page booklet, was the complete plan for a swift transition at all stations. Upon receipt of the teletyped clearance, telephone answering and flight announcements were changed to the new name. Announcements were made over the public address system in the aircraft. New signs, posters, streamers, wall maps, buttons and decals appeared in a matter of minutes. Newspaper, radio, and television ads reflected the change. Some ramp equipment and aircraft were repainted on M-Day.

• **The Fleet:** Delta-C&S fleet includes seven DC-6's, six Constellations, 31 DC-3's. By the late spring of 1954, there will also be 20 Convair 340's—Delta already has five of its 10; C&S starts receiving its 10 in September.

On order for early 1954 are four DC-7's. Delta has sold its DC-4's, but is leasing them temporarily, pending further Convair deliveries. When released, they will be turned over to their purchaser, New York Car Wheel Company, by the end of this summer. Some of the DC-3's will be sold as Convairs are delivered.

Advance planning had included standardization of the Convair fleet. A year ago, when the merger was first agreed upon, specifications of C&S's Convairs were modified to conform with those ordered by Delta. This eliminated the necessity for two sets of spare parts—one order for $1,000,000 in spares was canceled.

• **How it Operates:** Present plan is to operate the DC-6's over the Delta division, Connies over the C&S portion. Later, utilization will be increased by flying both planes over other segments for over-night layovers, and where the combined route pattern offers opportunities for quick turnarounds not possible in the separate systems.

• **Maintenance:** Two maintenance bases will continue to be operated—Atlanta and Memphis. At the respective bases, the following engine overhaul times will be used: DC-6's, 1,350 hours; Constellations, 1,700; DC-3's, 1,400. Airframe overhaul on Connies will be 9,000 hours, while DC-6's and DC-3's will be handled in 6,000- and 12,000-hour phases.

• **Employe Integration:** Prior to the April 22 stockholder vote, agreement had been reached on all jobs in all departments. In some of the top echelon planning, services of a New York management firm, Soranzo, Antell and Wright, were utilized.

When the merger was first announced, a group of C&S pilots fought the move, but this opposition faded during intervening months, and the pilots of both companies worked out seniority integration, without arbitration, well before the stockholder vote. Dispatchers, communications workers, and stewardesses also worked out seniority problems, despite the fact that Delta's employes in these categories were not union members, while C&S' were.

• **No reduction:** Total employment will not be reduced. Pre-merger Delta had 2,750 employes, C&S 1,500, giving the combined company a total of 4,250. Because some former C&S employes are

CONSOLIDATED OFFICIALS, with the exception of James Cobb, newly elected vice president of public relations, are gathered above. Seated: C. Putnam, chairman of the board; C. E. Woolman, president and genl. mgr.; S. A. Stewart, executive v.p.; standing: L. C. Parker, v.p. of traffic and sales; R. Maurer, legal v.p.; J. Cooper, v.p. of finance; T. Cole, v.p., comptroller; C. H. Dolson, v.p. of operations. Also in upper management echelon for Delta-C&S are T. M. Miller, asst. v.p. of traffic; W. T. Arthur, asst. v.p. of operations; C. H. McHenry, secretary; T. Oliver, treasurer; and C. FitzGerald, asst. treasurer.

choosing to remain in Memphis, rather than transfer to Atlanta with the combined company, additional personnel will have to be hired. About 300 are transferring to Atlanta in a gradual move.

A three-story office building, formerly occupied by CAA, has been leased at Atlanta airport, half a block from Delta's general offices. Until redecoration is completed, temporary Army buildings are being used.

Interchange services are not affected by the merger. C&S and TWA operate interchanges from Houston to Pittsburgh and New York over two different routes, one via St. Louis, the other via Shreveport, Memphis, and Indianapolis. Delta flies interchanges with TWA from Cincinnati to Detroit, and with American and National from Florida and the southeast to the Pacific coast.

The former separate companies had only four cities in common—Chicago, New Orleans, Jackson, and Shreveport. Ticket offices, etc., are being consolidated at those points.

Delta has been operating on a subsidy-free mail rate of 53¢ a ton-mile, while C&S was to have received in this fiscal year an estimated $615,000 subsidy domestically and $796,000 internationally. CAB, complimenting the "soundness of the merger," proposes to place Delta-C&S on the domestic subsidy-free rate of 53¢, and to determine the proper level of international rates. The Board estimated that the new domestic rate will mean immediate savings of about $539,000 in subsidy.

Delta-C&S is ambitious to extend its routes into the northeast section of the country. It has two applications on file: Atlanta-New York and Tulsa-Memphis-Atlanta-Charlotte-Washington-Philadelphia-New York. The company is also a party to CAB's New England-Southern States merger investigation, which includes a proposed Delta-C&S merger with Northeast Airlines. Although it is on CAB's books, there has been no activity in the latter case for months.

Looking back over the relatively short span of the merger proceedings, a company official has said that one of the principal reasons for its success was the fact that from the start Delta and C&S kept employes and stockholders briefed on what was going on. Teletype messages were relayed simultaneously to all 61 cities on both systems on any development of interest.

Pros and cons were discussed in numerous bulletins and in every issue of both employe magazines. Employe meetings were held in Memphis and Atlanta to discuss details.

During the CAB hearing, a summary of all testimony was released twice daily to all stations. Coverage was impartial, and included testimony that was introduced against the merger. • • •

RST TO BE MARKED with new Delta-C&S colors is this Convair 340.

NEWS BRIEFS

The Federal Government and Eastern Air Lines were **jointly liable for a crash** which followed the collision of an EAL DC-4 and a P-38 near Washington National Airport on November 1, 1949, according to a ruling by Federal Judge Matthew F. McGuire. Some **$10 million to $15 million in claims** is involved.

• •

The NACA budget has progressed as far as a Senate Appropriations subcommittee, shrinking all the way. It came out of the subcommittee roughly **$2 million lighter** than it went in. and now stands at $62.4 million.

• •

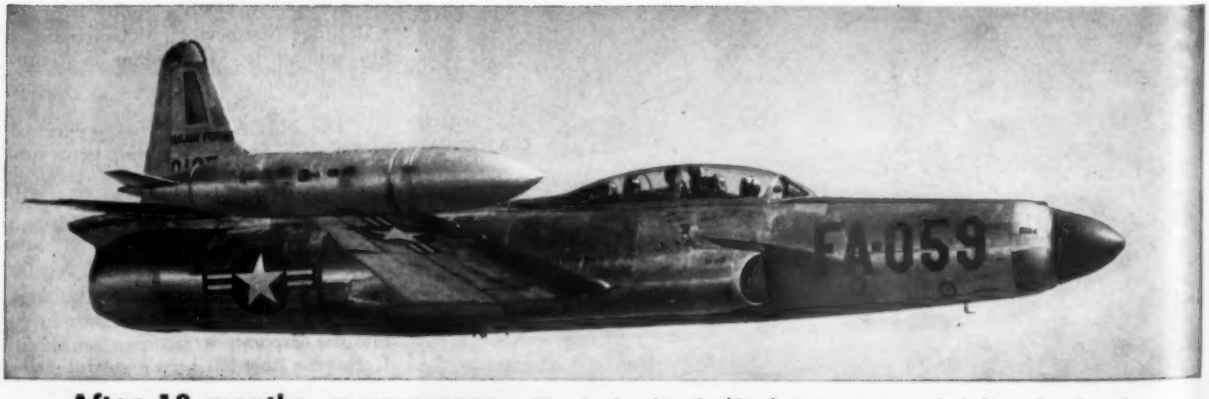
Purposeful crystal gazing at a range of **10 to 25 years** has been introduced into the corporate structure at Lockheed. **L. Eugene Root** has been named director of development planning, to head a group which will work directly under Hall L. Hibbard, v.p. of engineering.

Ready for action in Korea is the Grumman Cougar, according to the Navy. Already in organized units, the Cougar is in the "over 650 mph" class.

The Military View

Three Meteors refuel simultaneously from a USAF KB-29 in England, using probe-and-drogue system. Equipment was tested initially by Flight Refueling Ltd., an associate company of Flight Refueling of Danbury, Conn.

Grumman seems poised on its hydro-skis just before it leaves the water. Double ski arrangement is similar to that built into Convair's XF2Y-1, water-based fighter.



After 18 months, a new nose. That is the time Lockheed spent on research before changing the shape of the F-94C's plastic radome, adding a point and thereby adding five miles per hour to the fighter's speed.

Big CAA Shake-up Hits Jobs in All Offices

800 employes to be dropped; reshuffle caused by Civil Service rights will eventually affect 5,000.

By JOSEPH S. MURPHY

THE BIGGEST reorganization to hit the Civil Aeronautics Administration since its formation under the Civil Aeronautics Act of 1938 was fast taking final form at deadline. Following closely upon the announcement by new Administrator F. B. Lee of a field reorganization that reduces the number of regions in the U. S. from seven to four (see map below) these additional details of the overall revamping of CAA have been learned:

• **Total jobs eliminated** will total between 900 and 1000, representing a cut of about six per cent of the present 17,000 authorized positions in CAA. Number of actual personnel to be let go will probably fall nearer to the 800 mark.

• **But the actual effect** of the cut will be much more widespread. Some 5,000 CAA personnel stand to be directly affected, either through the exercise of Civil Service bumping rights by those whose jobs are being eliminated, or by outright reduction in force.

• **Regional realignment** will account for more than 400 of the positions being wiped out. Further budgetary cuts involving redirection of responsibility, shutdown of some district offices, elimination of educational workers in the regional setup, and reduction and centralization of the field and Washington medical program will account for others. CAA planning and evaluation staff activities in the regions will be dropped, while this activity in the Washington office will be curtailed.

• **Action on the reorganization** will move fast, with July 1, 1953, representing a deadline which will more or less dictate the issuance of severance notices by the end of this month. Otherwise the personnel being discharged would be carried on the payroll into fiscal 1954, without the funds appropriated for the positions.

No office in the CAA organization will survive without a cut of some sort. Hardest hit will be the regional offices in Atlanta, Chicago, and Seattle, which are being eliminated. Here some 420 jobs of the approximate 825 that exist today are being wiped out.

Not feeling the direct effect of the regional realignment but also hit by the overall reduction in force will be Region One in New York and the international region. Here personnel cuts will be in the form of adjustments in the Federal airways and aviation safety programs, primarily resulting from a new look at facilities and their operational necessity with respect to service workload, etc.

In the aviation safety activities in these regions, as well as in the remaining CAA organization, the emphasis of future assignments is expected to be placed on the operations of scheduled and nonscheduled air transport activities, as opposed to those of general aviation.

There has been no report of a shutdown of any of CAA's foreign offices in the international division.

Most changes in the top positions in CAA will result from the regional shakeup. The new line-up of regional heads includes Ora Young—Region One, New York; L. C. Elliott—Region Two, Fort Worth; L. W. Jurden—Region Three, Kansas City; and J. S. Marriot—Region Four, Los Angeles.

Ex-regional administrators George W. Vest (Region Three—Chicago) and R. D. Bedinger (Region Seven—Seattle) are reported to have filed application for retirement. New post of Special Assistant to the Administrator—Region Two will be filled by William M. Robertson, formerly the Regional Administrator of Region Two in Atlanta under the previous field organization. Robertson was also reported to have been a strong aspirant for the top post in CAA before the appointment of Fred B. Lee.

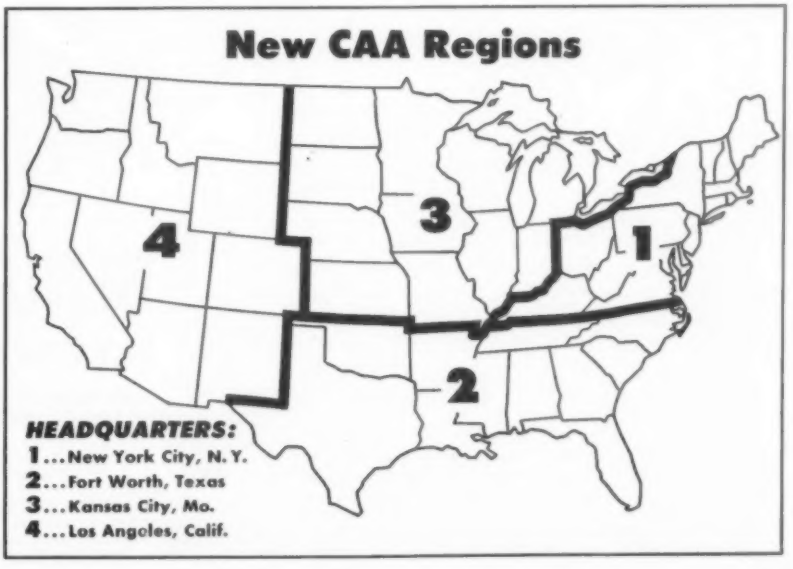
In the Washington staff organization the biggest shakeup has centered in the Office of Airports. Among the changes effected by Lee are the appointment of Herbert H. Howell to the post of Director, replacing Phillips Moore. Moore, in turn, has moved into the post formerly held by Howell, that of Special Advisor to the Administrator.

Major change in the structure of the Office of Airports will be the elimination of the Airport Planning Division under Paul H. Stafford and the consolidation of its functions into a research and analysis branch under the Office of the Administrator. Similar reduction in the field organization structure will result from these changes.

Overall cut in the Washington CAA staff will carry into all offices. Although the specific number of jobs to be eliminated has not been announced, or for that matter finally determined, it is expected to be in the order of seven to eight per cent of the approximate 1600 positions now assigned, or a total force reduction of about 110-130 jobs. In one representative office the percentage will run even higher, with nine jobs of 60 assigned reported to have fallen under the axe.

In other top jobs still vacant, the post of deputy administrator is not being filled, nor is it being eliminated.

• • •



News Briefs

New post for **Charles F. Horne,** former Civil Aeronautics Administrator, will be as a consultant for the radio division of the **Bendix Aviation Corporation.** Horne's background was almost entirely in electronics before he became CAA Administrator in 1951.

• •

The former vice president of operations for Glenn L. Martin, **C. C. Pearson,** will join **Beech Aircraft Corp.** as vice president in charge of manufacturing. Pearson has also worked with both Douglas and Curtiss-Wright during his 23 years in the industry.

• •

Some **$34 million in new financing** is ahead for the **de Havilland Co.** during the next three or four years. About half of the sum will come from sale of stock, the remainder from banks.

• •

Family flying will be given an assist by jet engines, most of all by the ducted fan, according to **Hall L. Hibbard,** vice president of engineering for Lockheed Aircraft Corp. Hibbard also predicts that turboprops will provide seat-mile passenger costs **lower than present bus fares.**

• •

We haven't seen **the last of the Constellation series,** according to Lockheed's president, Robert E. Gross, who might be expected to know. Supporting his claim are reports that both Pan American and TWA have been impressed by a new, **extremely long range version** of the Super Connie, which is still being kept under wraps.

• •

Damage to air freight dropped in 1952 to ¾¢ on the revenue dollar, in terms of net claims paid. Nearly all such shipments are in less-than-truckload or less-than-carload batches, and thus particularly suspectible to damage or loss.

• •

The Chilean airline **Linea Aerea Nacional has bought three DC-6B's,** thus becoming the 27th carrier to do so, and raising to 442 the number of DC-6 and DC-7 aircraft that have been sold.

The cost-of-living index for March 15 sent aircraft workers' **pay scales down one cent per hour** at AiResearch, Convair, Douglas, Lockheed, Hughes, and Northrop. The scales have now hit bottom, except in the case of Northrop, where they could fall one more cent, and Ryan, which was geared to an index which is now non-existent.

• •

There is **"no deal" between Lockheed and Hughes Aircraft,** according to Lockheed president Robert E. Gross. Lockheed more than tripled its first quarter earnings this year, reporting an estimate of $3.5 million, as compared with $1.1 million earned in the first quarter of 1952.

• •

Lake Littlejohn, who retired from the CAA in January, has become manager of **Harrison County Airport,** Marshall, Texas.

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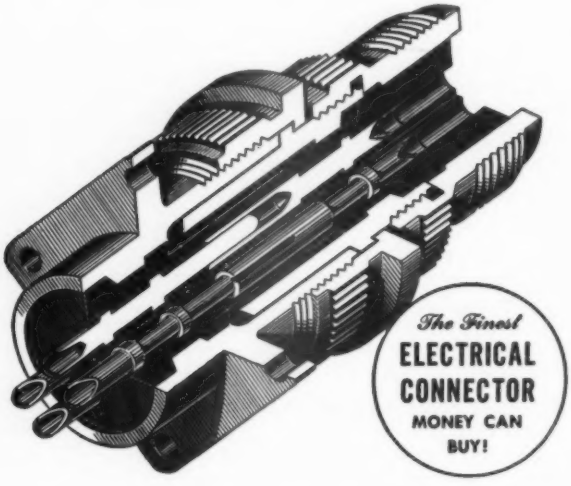

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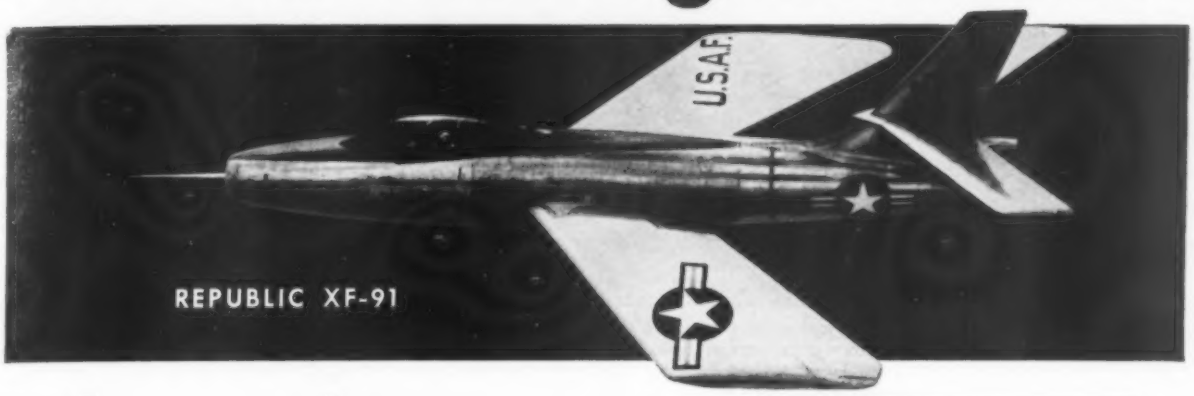
Variable Wing Incidence



depends upon VICKERS HYDRAULIC MOTOR

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EXCEPTIONAL HORSEPOWER TO WEIGHT RATIO

CAN BE STALLED INDEFINITELY WITHOUT DAMAGE

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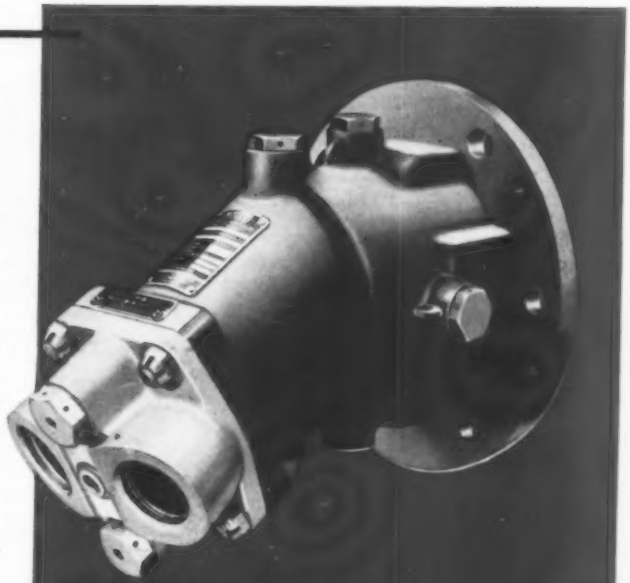
Vickers Hydraulics have helped make aviation history for years in both military and commercial planes. Write for new Motor Bulletin 5205.



Vickers Model MF-3915 Series

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DIVISION OF THE SPERRY CORPORATION
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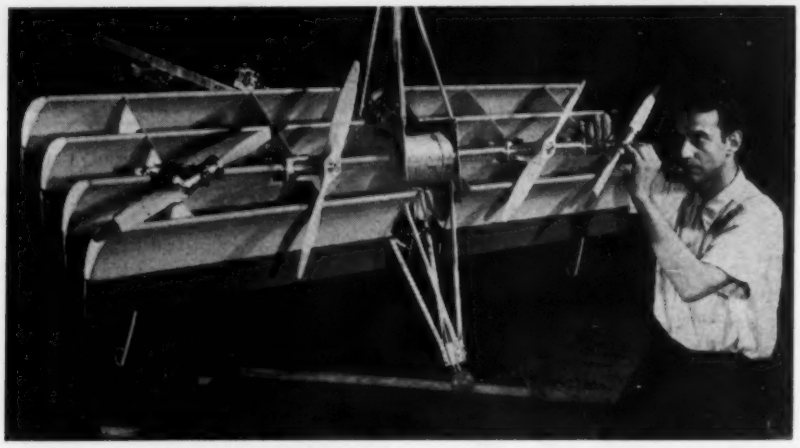
ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921



VENETIAN BLIND is nick-name for vertically rising quadriplane model, shown in normal flying attitude.

Vertical Take-off Project Revealed

Missiles, hydro-ski designs also high on list of hottest programs at NACA; problems up to Mach 20.

VERTICALLY rising aircraft which will fly at current airplane speeds, faster hydro-ski devices for landings and take-offs of water-based aircraft, and supersonic guided missiles and pilotless fighters are among the hottest projects in the military at present, and all three may some day be adapted for commercial use as well.

Much of the research on these and related problems is being conducted at the National Advisory Committee for Aeronautics' Langley Aeronautical Laboratory in Virginia, which was thrown open for inspection by press, government, and industry representatives earlier this month.

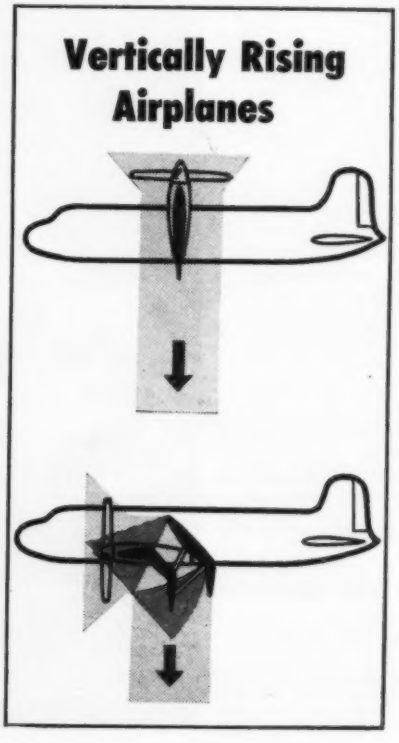
Those who attended the inspection got an idea of some of the problems and advantages inherent in the vertical riser, three prototypes of which are now under construction for the Air Force with the convertiplane designation. The problem of getting such a craft is relatively simple: to produce direct lift for hovering flight, air must be accelerated downward. This may be done in either of two ways:

• **Rotating the propellers** through a 90° angle so that they face straight up. After the desired altitude is reached the rotors are rotated back to normal and thus become propellers for attaining higher speeds. This concept is being used in the Bell Aircraft Corp. convertiplane.

• **Deflecting the wings and flaps** so that the slipstream turns downward while the props remain in their normal position. This is the system that is currently under study at NACA's Langley Laboratory.

A model using this latter concept has been built with four variable-curvature wings of five-foot span. Looking very much like a "flying venetian blind," the model uses electric motors to power the four propellers.

By varying the pitch of the outward propellers differentially to increase the velocity of the down-deflected slipstream on one side and reduce it on the other, NACA scientists are able to control the model's roll. Yaw control is obtained by arranging the flaps so that the slipstream is deflected backward from the vertical on one side and forward on the other.



The hydro-ski studies under way at Langley, which were begun in 1947 and some of which have already been incorporated into the Navy's Convair F2Y-1 water-based jet fighter, are now aimed at permitting aircraft designers to determine which type of hydro-skis best suits their needs. The early flat-plate hydro-skis had good life and acceptable resistance characteristics but proved to be difficult to retract into curved fuselages, and curved ones proved even less efficient.

NACA's Hydrodynamics Division is also investigating the use of hydro-skis for ditching of existing and new aircraft. It has already been discovered, for example, that chances of survival in the ditching of a Lockheed Constellation or Boeing Stratocruiser would be greatly enhanced were such craft fitted with hydro-skis. One big advantage of the studies, NACA engineers claim, is the fact that ditching characteristics of new designs can be made analytically if they resemble models already tested.

NACA's Langley research on pilotless aircraft and guided missiles (flight tests are carried out at nearby Wallops Island, Va.) is the intermediate step between wind tunnel studies and flight tests at Edwards Air Force Base in Muroc, Calif.

Just how closely some of the research missiles resemble actual secret weapons now or soon-to-be under construction for the military services was evidenced by Langley scientists' refusal to describe the missiles on display in detail. One of them, however, was obviously the Boeing F-99 Bomarc (AMERICAN AVIATION, March 30) and some of the others presumably were test models of the Northrop XB-62 Snark and Bell XB-63 Rascal. One of the missiles described was a 40-footer which would fly at Mach 2.5 at 50,000 feet.

But the Langley Aeronautical Laboratory is not limiting itself to speeds and altitudes in that range. Its new Gas Dynamics Laboratory, for example, is designed for testing at speeds of Mach Nine (6840 miles an hour at sea level) and 200,000-foot altitudes. The same lab has also developed special ballistic techniques which study aerodynamic problems at Mach numbers up to 20 (15,000 miles per hour). • • •

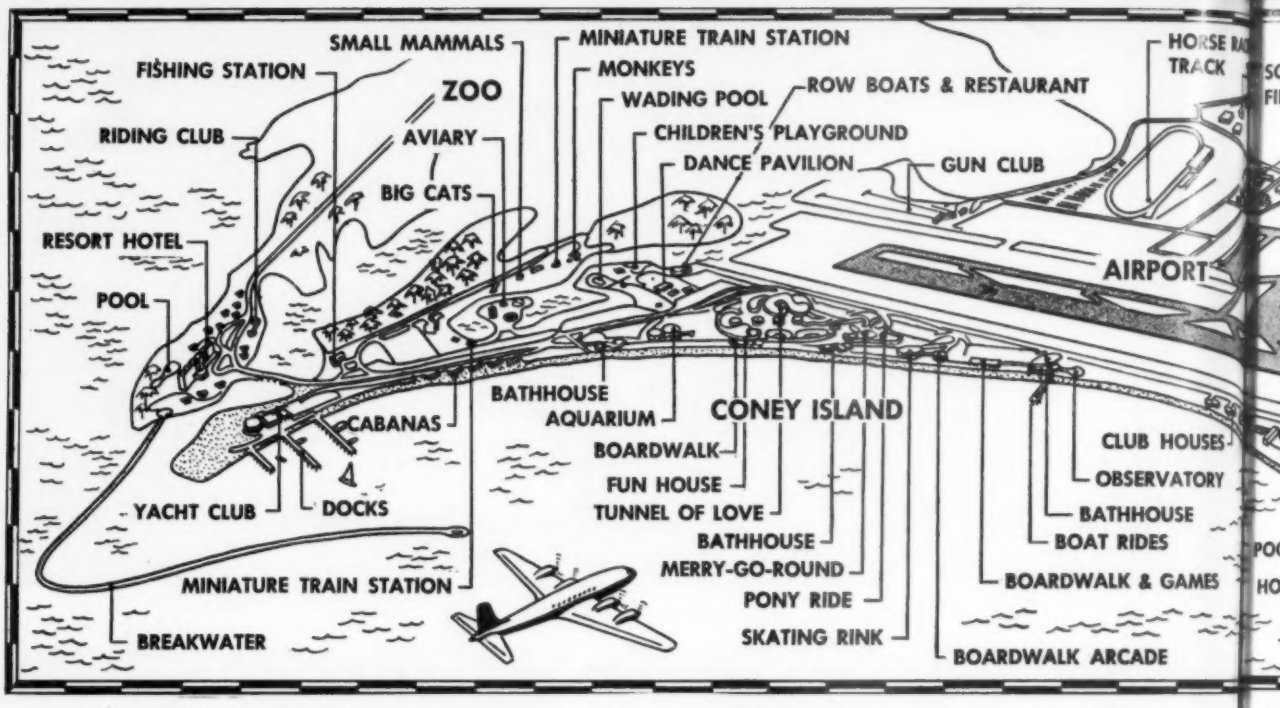
PRINCIPLE of "Venetian blind" aircraft, in which airflow changes direction, is illustrated at left.

LOW-SPEED characteristics are studied in 60-foot-wide tunnel at Langley lab. Model resembles Convair's F-102.

EXTRA FUEL TANK LOCATIONS are tested on models like this shown ready for take-off at Wallops Island.

HYDRO-SKI model is readied for test run in towing tank. Model can lift off water as speed increases.

HIGH SPEED air flows are studied with the use of plastic models like these, which have various apex angles.



SAN JUAN'S new Isla Verde International Airport will be a self-contained community with accent on recreation.

Puerto Rico Hitches Its Future to Aviation

Emigration and tourist travel make "sky-bus" service a necessity, air-minded island is convinced.

By Anthony Vandyk

SAN JUAN, PUERTO RICO—If a new name were wanted for Puerto Rico, "aviation island" would be a logical choice. The future of this piece of U. S. territory, located where the Caribbean meets the Atlantic 1000 miles southeast of Miami, is intimately linked with aviation—both in respect to industry and transport.

As Governor Munoz Marin puts it: "The progress of the aviation industry may well be the most important single technical development contributing to the substantial economic and social progress achieved during the past 15 years. Certainly our future is inextricably bound to air transportation."

The importance attached to aviation can best be understood after realizing that Puerto Rico is one of the most densely populated areas in the world—2¼ million people crowded into an island only twice the size of Long Island—with almost no natural resources other than sugar cane. If the continental United States were as densely populated, it would have 1,989 million, instead of 157 million, inhabitants. With the present steadily rising excess of births over deaths, the population of Puerto Rico will double in approximately 26 years, and within 75 years will reach the 18 million mark.

Emigration is therefore Puerto Rico's demographic escape valve, and it is in this connection that aviation has been of greatest service to the island.

In the wartime and early postwar years when the emigration trend was gathering strength, steamship services to the mainland were inadequate and expensive. Initially the air emigration movement was almost entirely in the hands of the non-scheduled carriers, who were able to offer fares at a fraction of the cost of sea travel.

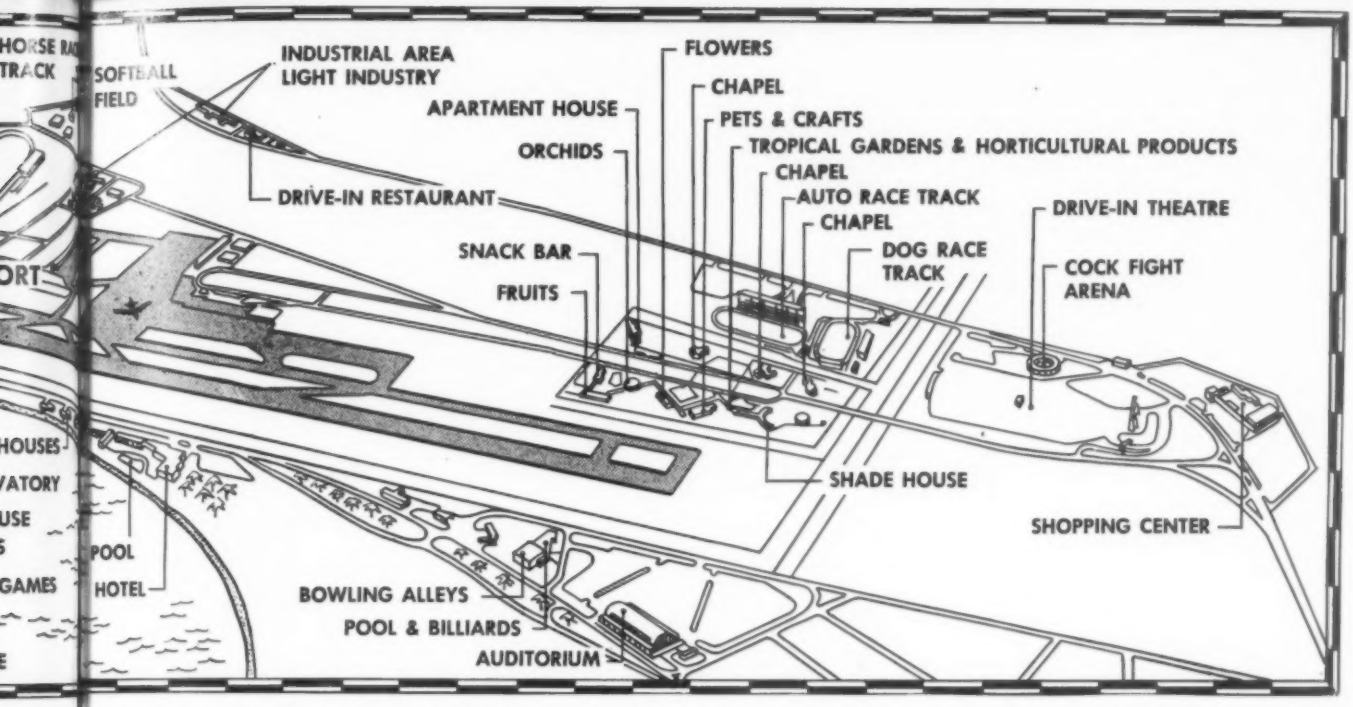
Competition between the non-skeds forced reduction of the fare to as little as $35 (against $150 for the sea trip) but safety standards were also driven down. Several crashes costing many lives led the insular government to add its own inspection requirements to those of the Federal Government.

Today the non-skeds are virtually out of the Puerto Rican passenger business; in March, 1953, for instance, they carried only 2,666 of San Juan's total of 47,487 passengers. The bulk of the migrants use the coach service of Pan American World Airways and Eastern Air Lines at a fare of $64.

This fare is a controversial subject in Puerto Rico. The local authorities claim that it is far more than the masses of people can afford to pay; that it leaves huge layers of potential traffic untapped; and that it imposes a barrier against the migration of workers to the mainland and the creation of new jobs at home.

The airlines, on the other hand, point out that $64 for the 1,600-mile San Juan-New York trip works out at lower cents-per-mile rate than U.S. domestic coach fares. They also stress that the route is an unsatisfactory one in view of the lack of southbound loads: it is only in the fall, when the seasonal farm workers who migrate temporarily to the mainland in the spring return to the island, that southbound load factors are satisfactory.

Nevertheless, the Puerto Rican authorities are determined not to relax their efforts to get a "sky-bus" service to the mainland at a fare of $30. They feel that without such a service government and business executives cannot easily come and go; that the provision of jobs on the island is halted; that the tourist trade cannot cater to persons of modest means; and that the result is



A SUPER HIGHWAY will connect Isle Verde with San Juan, Puerto Rico's capital, a few miles to the west.

a lack of a means of sending surplus workers to jobs on the mainland.

To the casual observer at San Juan's soon-to-be-replaced Isla Grande airport there is no problem attached to the air migration movement. At this writing each of Pan American's two morning coach services out of San Juan has three extra sections—a full 70-seater DC-4 taking off every 15 minutes between 9:00 and 11:00. Pan Am, incidentally, uses a traffic system of identifying outbound San Juan coach passengers and their baggage by number rather than name which simplifies and accelerates handling. Eastern, too, is very active in the migrant business and recently contracted to fly 11,000 laborers north over a period of 2½ months.

Air passenger business to and from Puerto Rico recently assumed a new importance when the passenger steamship service to the mainland was suspended. Apart from limited passenger accommodation in slow freighters, the only means of transportation to the island is by air.

The extent of air transport business in Puerto Rico is almost limitless, the island's Transportation Authority believes. Passenger traffic at San Juan, which totalled 442,000 in 1952, is expected to increase to 665,000 by 1960 and to 968,000 by 1970. Air cargo is expected to rise from last year's almost 12 million pounds to 79,300,000 pounds in 1960 and to 183,400,000 in 1970.

The air cargo increase is largely based on the island authorities' belief that the rates are bound to come down. Governor Munoz Marin, while realizing that without air cargo service the island's recently established industries could not survive, considers that there are many production items suited to Puerto Rican conditions which must await lower air cargo rates before they can be produced profitably. Nevertheless, it is encouraging to note that outbound cargo traffic (328,000 pounds in March) is gradually representing a higher percentage of inbound (947,561 pounds in March).

The majority of Puerto Rico's air cargo is handled by Riddle Aviation and Pan American; Riddle flies in from Miami to San Juan and Santa Isabel with scheduled all-cargo flights and is building up a fine reputation in the island. Meat is flown into San Juan in quantity from the Dominican Republic by Compania Dominicana de Aviacion (CDA), but there is little return cargo.

Apart from Puerto Rico's own Caribair (see box) other carriers regularly serving San Juan include Delta-Chicago & Southern (with Lockheed

PUERTO RICAN cement was used for Isla Verde airport's runway and taxiways. The terminal building is now being built. Field should be open early next year.

DC-3's OPERATED BY PUERTO RICO'S Caribbean-Atlantic Airlines (Caribair) will be replaced with helicopters.

Caribair: Puerto Rico's Own

Puerto Rico's own Caribbean-Atlantic Airlines (Caribair) plans the helicopter as the replacement for its fleet of three 28-seat DC-3's (soon to be supplemented by a fourth) in view of the carrier's short routes and the poor location of the few existing airports on the island (every Puerto Rican community has a baseball park or a cock-fighting arena which would make ideal heliports).

In addition to local insular operations, Caribair also serves Ciudad Trujillo (Dominican Republic) and the Virgin Islands. The latter run is the company's most profitable operation—last year Caribair flew 59,220 passengers between San Juan and St. Thomas (the customs-free set-up and the easy divorce laws of the Virgin Islands are attracting increasing numbers of visitors and "residents"). The airline's total traffic in 1952 amounted to 110,873 passengers (passenger-miles flown were 8,912,000). Under the able direction of president Dionisio Trigo, the 14-year-old airline has shown consistent gains in traffic. In 1952 the company netted $25,785 on total operating revenue of $1,107,042.

Caribair carries out all its own maintenance and overhaul work except for overhauls of engines, fuel pumps, and instruments, which are performed by American Airmotive at Miami. A large stock of spare parts (including a batch of major components such as wings, stabilizers, and landing gears recently acquired from Eastern Air Lines "at a very attractive price") and a very efficient, compact shop enable the performance factor to be kept at a very high level (99.33% in 1952).

Pan American connects San Juan with many points in the Caribbean area and Latin America as well as with Miami and New York, whereas Eastern provides service to the U. S. only.

Although both carriers use Lockheed Constellations on their first-class schedules, the Puerto Rican authorities are anxious to see still faster aircraft in service. Last fall airminded Teodoro Moscosco, head of Puerto Rico's Economic Development Administration, accompanied Captain Eddie Rickenbacker, president and general manager of Eastern, to England and tried to induce him to operate de Havilland Comets between New York and San Juan (the Puerto Rican EDA would have bought the planes, but Eastern reportedly considered that they would have been too expensive to operate).

The reason for Puerto Rico's liking for fast aircraft is the belief that the island's development would be stimulated substantially. Governor Marin Munoz says: "If New York were only three or three and a half, instead of six, hours away it would be a boon to our industrialization and tourist programs. . . . There is a close correlation between the flow of investment capital from home office to branch plant and the accessibility of branch plant to home office management."

The rapidly rising flow of traffic at San Juan's Isla Grande airport (leased from the Navy) has caused the enterprising insular authorities (notably the Transportation Authority headed by Salvador Caro with John Randolph as aviation chief) to build a huge new $15,000,000 airport at Isla Verde which will be the finest facility in the Caribbean and one of the best in the world. As may be seen from the illustration on pages 26 and 27, the airport will be surrounded by what is virtually a small town, with facilities of every kind from chapels to racetracks, all of which will be treated as airport concessions and will net the Transportation Authority many thousands of dollars.

The 7,800-foot concrete runway and taxiways are already completed and the terminal building (illustrated in AMERICAN AVIATION of March 2) will be ready for use early next year. The architects include the group which designed San Juan's Caribe Hilton Hotel.

Part of the airport will be devoted to an industrial area under a program aimed to make Isla Grande another Miami, with aircraft overhaul and manufacturing facilities right on the perimeter of the field. Puerto Rico already has an embryo aircraft industry represented by such firms as Aero Components Inc., which manufactures aluminum rivets; Kirk Wing Company, makers of drill bushings for aircraft; United Devices Garry Mfg.), which manufactures small precision parts for aircraft; and Caribe Aircraft Radio Corp., which assembles and tests electronic systems and parts.

Airframe Production

These companies, the Puerto Rican authorities believe, are but the vanguard of a large number of aircraft firms which are actively studying the advantages of starting subsidiaries on the island; one of these firms is interested in building complete airframes in Puerto Rico.

In addition to the geographical advantages of being near to both North and South America (Venezuela is less than 600 miles away), the inducements offered by the Puerto Rican authorities are numerous and include:

- **Complete tax exemption** including income, property, and municipal, until June 30, 1959, and partial exemption for three additional years (in addition to freedom from Federal taxation in the corporate and individual tax categories).
- **Loan facilities** through the Government Development Bank for Puerto Rico which supplements commercial banking facilities with long-term loans for suitable industries.
- **Industrial space** in buildings already constructed, or which may be tailored-to-order by the Puerto Rico Industrial Development Company, for lease or purchase at cost.
- **Personnel screening** and training by the Puerto Rican authorities.

Advantages such as these emphasize that this expanding island commonwealth, which is an integral part of the United States, is sincere when it extends to the American aviation industry its Latin-flavored "Bienvenido"—Welcome!

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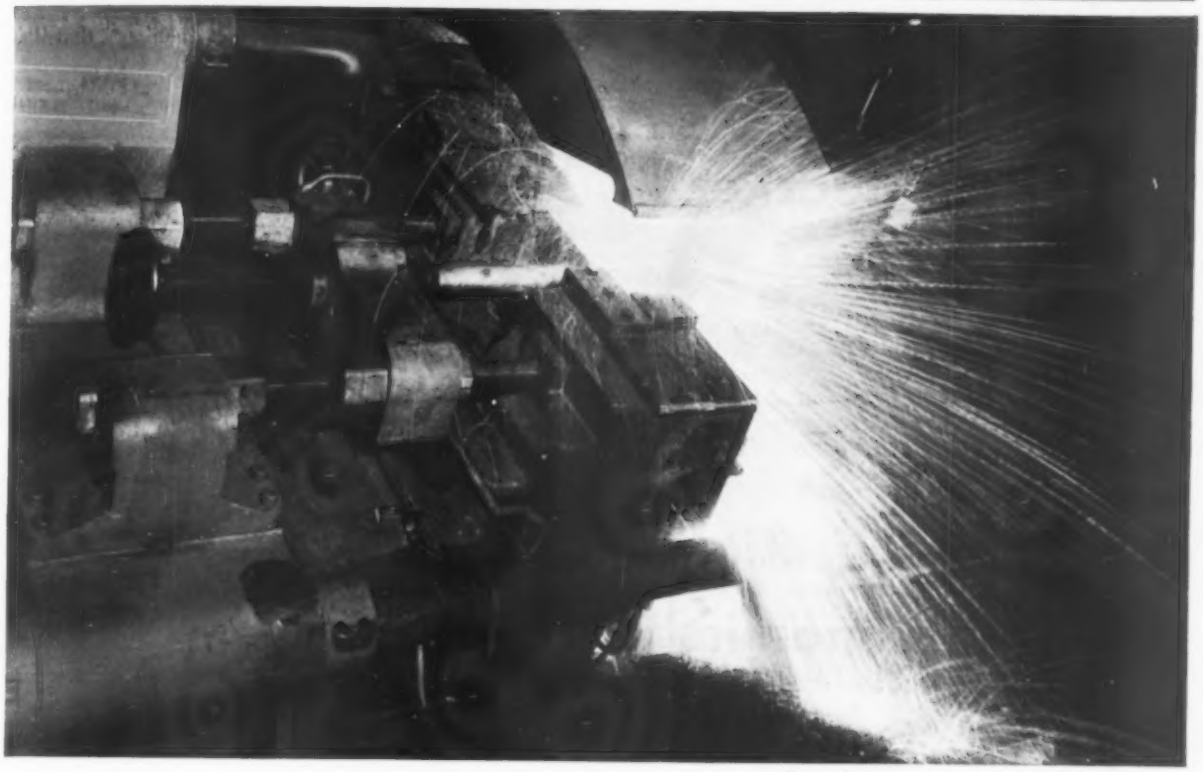

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Interview

with

E. V. Rickenbacker

President
Eastern Air Lines

• •

Today's Big Questions: Jets and Economics

• •

Edward Vernon Rickenbacker, president and general manager of Eastern Air Lines, which is currently celebrating its 25th anniversary, was born in Columbus, Ohio, on October 8, 1890. "The Captain," as he is known throughout the industry, has had a long and varied career in the automotive field, and in military and commercial aviation. In the latter field, he heads a company that has made a profit each year since 1934. He has never hesitated to express his opinion—sometimes bluntly—on industry problems.

Before World War I, Rickenbacker was associated with several automobile companies (studying mechanical engineering and drafting with International Correspondence School) and engaged in numerous racing activities. During that war, he started his military service as a staff driver for General Pershing, and finished it as the top U.S. ace.

In 1921, he again joined the auto industry and worked first with the Rickenbacker Motor Co., and then later with Cadillac. In 1929 he was transferred by General Motors from Cadillac to General Aviation Manufacturing Corporation as vice president and sales director. Three years later he joined Aviation Corporation as vice president of American Airways.

On June 1, 1933, Rickenbacker went with North American Aviation as vice president, and on January 1, 1935, was appointed general manager of that company's Eastern Air Lines division. In April, 1938, he headed a group which bought control of Eastern from North American for $3.5 million. He has been president and general manager ever since.

Q. Would you comment on the industry's financial status?

A. The current financial status can be lived with, but that does not mean that we are in a sound position as an industry. We have had several years of apparent prosperity, but if you take 30% of the travel out of the picture—military travel—our airlines would be in a bad fix. The loss of military traffic could happen within a year's time very easily.

We might lose more than that, because we can't evaluate the dependents—wives, mothers, and family members—that are traveling, visting these soldiers. Also, add the fact that we have been riding a high wave of prosperity since 1939, except for the dip in 1947 and 1948.

Yet we have not been able, as an industry, to accumulate sufficient reserves to withstand any serious slowing up in the business for any length of time because (1) we are still an infant industry; (2) we are growing very rapidly; (3) our capital needs have become staggering.

Q. **Has the airlines' poor record of dividend payments hurt their position?**

A. Yes, very definitely. Earnings have not been sufficient to justify establishing a dividend policy that is comparable with other industries. We have had to preserve and plow back into the business whatever we did earn because we were not in a position to go out and borrow to the degree that we should have been able to.

Now, some of the airlines went out and put ropes around their necks, as I call it, by financing through senior securities—bonds and preferred issues. These are fundamentally unsound in a growing new industry, because you are assuming fixed obligations (in the form of amortization of those senior securities), plus fixed interest charges which run into a good many millions of dollars a year.

Our financing should all be through equity capital, common stock financing. But to do that we have to show the public one of two things, possibly both: (1) appreciation that goes with the gamble of a new growth industry, and (2) wages (dividends) for the use of their money.

Q. **How widespread is this financing through senior securities?**

A. General, I think. I have kept Eastern's balance sheet cleaner than any other in the business because I have followed the philosophy that I'm preaching. We have no preferred issues and no bond issues as senior securities, and what bank loans we have are unsecured.

All this is possible because Eastern has a record of consistent earnings since 1934; we have never been in red ink. This has been done by getting the most efficiency out of our operations, cutting even a penny's worth of waste wherever we found it, and by ultra-conservative bookkeeping.

As an illustration of this, we depreciate all of our equipment, as far as public statements are concerned, on a four-year basis—have all through the years—and for tax purposes, on a five-year basis. This means that our stock has had a better basic value than the average company's stock, even in other lines of business.

"Return-on-investment is... the wrong philosophy"

Again, the tremendous expansion of our industry has demanded a constant revision of shops and ground equipment, constant improvement of facilities despite constantly increasing costs. These expenses are written off as we go. I can't spend the money out of one pocket and try to keep it in another. It doesn't work. When it is spent it is written off and forgotten, so that our balance sheet represents clean assets and cash.

Q. **Has CAB's economic policies had any appreciable effect on this?**

A. The fundamental weakness, as I see it, is in the philosophy followed by the Board and the staff.

That philosophy, which I consider obsolete for air transportation, has led the board to cut mail pay in many cases where it should not have been cut. They have also promoted reductions in fares where and when there should not have been such reductions.

Take a look at what happened in 1943. I blame some of the industry for that because, you remember, some of the airlines were vying to see who was going to be first to cut rates.

Here we were in the position of ordering hundreds of millions of dollars worth of postwar equipment. Sure, we were making money—but not in proportion to the way we were spending it.

I fought the industry tooth and nail on that reduction, and what eventually happened is what I said would happen. The day of reckoning came . . . military business dropped off, load factors slipped, and they didn't have the reserves to pay for the equipment that they had ordered.

We are in that same position today: everybody has a lot of high priced equipment on order, hundreds of millions of dollars worth. We have a chance of a Korean truce; business is already slowing up; it is going to slow up more. There is no question about that, in my opinion. And yet, with that same handwriting on the wall, under that obsolete philosophy followed by the Board and its staff, a general fare investigation was called, looking toward a reduction in rates.

Had they let the industry stay in a reasonably sound position and accumulate adequate reserves during the past four or five years, the airlines could stand what is ahead of them without having to go into the taxpayers' pockets again for millions in subsidies to keep them alive.

Q. **Aren't the airlines earning a reasonable return on investment?**

A. That "return-on-investment" is what I mean by the wrong philosophy. The Civil Aeronautics Act says nothing whatever about return on capital investment as being mandatory for the basing of rates. Yet, some of the airlines and members of the Board and its staff have assumed that that is the basis on which they should operate.

It is fundamentally unsound for our industry (1) because of the rapid technological development forcing us to replace equipment so often; and (2) because our equipment is obsolete in four to seven years.

That return-on-investment philosophy was designed, years and years ago, for the railroads and public utilities, but we do not have the base capital invested in assets to draw from like the utilities and the railroads have. Their great advantage in that "return-on-investment" philosophy is that they depreciate their equipment in 25 to 30 years. They have many billions involved in the basic foundation of their industry. We have nothing like that. Ours is almost all in flying equipment which obsoletes itself in four to seven years and has to be replaced.

Because of the tremendous base the utilities and railroads have, the ratio of their expense dollar to their gross revenue dollar is about 30c. Let me illustrate: for every dollar they have invested the utilities take in about 30c in gross revenue, the railroads about 40c, the bus companies around 80c to 90c. They are more like we are. For every dollar the airlines have invested we take in about $2.00 in revenue. But that goes right out in expenses and taxes.

The result is, we haven't enough left to set up the reserve margin that is necessary to take care of our development and new equipment or to weather a dip in gross revenue. A 10% reduction in current load factors and every airline in this industry is in red ink, some of them so deep that they might never get out.

Alternate Theory

Q. **What would you propose as an alternate to the return-on-investment theory?**

A. I have been a very great believer in the operating-ratio philosophy for our industry. Some of the bus companies have it in some of the states. Their transportation commissions have already adopted it. They have done a good job of developing it. That means they operate on the ratio of the expense dollar to the gross revenue dollar. When your costs go up to where ours are, anywhere from 90c to 98c expense per dollar of revenue, you haven't much left. We ought to have a basic operating ratio of 80% per dollar.

If you have that, and you get a dollar revenue with an operating ratio of 80%, you can build up strength. That's your period of prosperity; that's when you build your reserve. Then, when business activity slows down, that dollar revenue comes down closer to the dollar expense of 80% of the dollar. When you get to 90 that's a red flag—that is when you have got to readjust, and you automatically readjust your tariffs preparatory to changing your prices.

Q. **Is there any sign of this airline financing need leveling off, or is this tremendous equipment program apt to repeat itself soon?**

A. Well, let me illustrate with our own case. We are about 65% through a re-equipment program that will cost us in the neighborhood of $140 million.

Now there are two places that we can get that money from: one is from depreciation reserves and the other is profit, to pay off our bank loans supporting it—which have to be paid off in the next four years.

On the other hand, remember that we are only 65% through that $140 million program. Yet we are already thinking in terms of spending millions more on the re-equipment of the line with jet-propelled airplanes. Someday we are going to have them, and that means within the next six to eight years we will have to be prepared to spend another $150 to $200 million.

Now, supposing we arrive at that period, say six years hence, and those jets are available (I don't think they will be) and we haven't any money in the bank. What is going to happen to us? In the first place, if we have enough credit we will be able to borrow on unsecured notes, bank loans; if we haven't, our next step is to issue a preferred stock and hock the assets of the company—in convertible debentures, maybe. That would put a rope around our neck—four or

4½% for the money plus an amortization rate of so much per year of that issue.

Supposing our credit is very bad, then the next thing is a bond issue, and that, of course, puts all our assets in the hands of preferred holders; the common stockholders haven't any real value there. That means another more deadly rope around our neck. And there are companies that won't even be able to get capital at that price.

Again, if we had an operating-ratio philosophy, we would be able to build up a reserve that would stabilize the industry and permit our airlines to go out and spend money on the new equipment they will need.

I am just a little worried about the British and their jet program being financed by our tax dollar to compete with us. Their operating deficits are being financed by our tax dollars in international business and trade—while here at home, our operators are being pinched down to the point where there won't be any reserves left.

This is one main reason why, today, every operator is very reticent about getting into a jet program.

In my opinion, as an industry we should be helping the manufacturers finance the development of these jet prototypes—not the government, industry—so no matter what, our industry could keep pace with world jet developments. That means 25 or 30 million dollars for a prototype; it means, after that, four or five million dollars a unit for operational models. So you can see what we are headed for.

Unless we can do something like that, why the British will eventually garner the field, and we will lose our world aircraft market, which we have always held because of merit, quality, and price.

CAB Independence

Q. **You spoke a little while ago about CAB. There have been comments in the industry recently both ways about continuing the Board as an independent agency. What is your feeling?**

A. The Board must very definitely be maintained as an independent agency—if we are ever going to grow. If we don't keep it an independent agency we will be so hemmed in by the other forms of transportation that we will never get anywhere. They would kill us overnight.

Q. **Do you have any comment to make on how the Board membership should be made up; are you satisfied with the type of people?**

A. Well, as I have said, we need the most capable guidance we can get. The Board and staff members ought to be paid more so that those jobs could attract the best qualified men. There are good men on the Board now, but airline economics is new to some of them. They shouldn't have to take someone else's word for it.

Q. **Do you feel that the spiraling costs justify an increase in fares at this time?**

A. At present, first class fares are running about nine to 10% above the 1940 fares; wages have gone up 100 to 200%; supplies and materials have gone up 100 to 200%.

Q. **Is it too late now to have such an increase?**

A. No, it isn't too late. But you have to balance all these things. Everybody is promoting air coach—that seems to be another philosophy of the Board. It sounds fine—but it takes a lot of long-headed study. A lot of people are confused about this air coach promotion because they think its a way to get rid of the nonscheduled jitneys and jalopies. It isn't. Economics will take care of them one of these days.

Nonskeds will never have any capital investment as long as they can buy junk at junk prices. That's the dead end of the road. If they all had to go out today and buy brand new equipment they would quit in a hurry. First, because they don't have the money to buy new equipment, and, second, they couldn't get the money if they tried.

If they were forced to live up to our standards of inspection, maintenance, safety, and accounting practices, that would stop the nonskeds too.

Q. **Is your coach business profitable?**

A. Yes, though not to the degree that the regular fare business is by any means. The only reason we can make a profit on the air coach is because it's long haul. There is a very great hazard ahead of us in this air coach craze. As they pressure this coach business into the industry, all kinds of small cities are going to start demanding it; in fact, they already are. That means multiple overhead. We would go broke by tomorrow night if we had to put coach service into every city on our line—because the overhead would eat it up. You can't operate local service for four cents a mile.

Q. **How many of your 90 cities do you serve with air coach?**

A. New York, Boston, Washington, Jacksonville, Miami, Tampa, Atlanta, Birmingham, New Orleans, Houston, San Antonio, Charlotte, Cleveland, Detroit—about 14-15 cities out of the 90.

Q. **How much diversion is the coach offering?**

A. Thirty per cent. That's conservative. But as you go along it multiplies. We now have daylight air coaches on the New York-Miami and Chicago-Miami runs.

Q. **Could coach development make air travel a mass travel medium in the near future?**

A. We will not be a mass transportation industry for another 15 to 20 years because if we were able, today, to cut our fares—all fares—to say four cents or 4½¢, and if we had airplanes enough to take care of the demand, you would find that we only have one-third of the airports qualified to handle the business that you would need to support such fares. So it is a vicious cycle.

Q. **Do you see a short-haul turbo transport as feasible in the near future?**

A. I think you are going to wait a long time before you get a turboprop job that's going to be as economical as the Martin 4-0-4 or as the Convair 340. You can't get enough increase in speed. A 100 mph advantage on a long haul is worth a lot of money, but on a short haul it isn't worth very much. It may only make a difference of a few minutes between New York and Washington, for instance. Now, the cost of getting that 100 mph is so prohibitive in operating costs that you couldn't afford it by comparison with the reciprocating engine equipment that you have today.

Someday it will come. As an illustration of lack of economy in the present design, take the Vickers Viscount. Their 60-passenger airplane, regular density, would give us only about two minutes faster service between Chicago and Miami than our Super Constellation. The cost per mile would almost be double and the cost of the unit, to start with, is equal to a Super Constellation, which carries 88

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people and costs half as much per mile to operate. It does not make sense. It will come. But it isn't here yet.

Take the turbojet. The opportunity for it to succeed is greater because it is all long-haul operating, and there speed means something because it cuts your operating costs. On a jet engine in any of these ships, in another five or six years, they may be able to get 500 hours between overhauls. But they are figuring the cost anywhere from 12 to 20% of the purchase price for each overhaul. This means you wear out an engine at the end of 2500 to 3000 hours.

The Super Constellation engine costs us three per cent of the initial cost per overhaul. And that engine is good for around 1400-1500 hours between overhauls, and we will get about 4000 hours per year per engine (probably a conservative figure). We overhaul that engine, say, three times a year.

That engine can go on for several years, whereas we wear out a jet engine in less than a year if we operate it for the same utilization we are getting with the piston engine.

The Comets Are Not There

Q. **Will you comment on the de Havilland Comet and your negotiations with de Havilland in regard to buying these jets.**

A. If the Comets had proved up to what I hoped for, and needed, I would definitely have bought them. I was authorized to buy. But the economics are just not there, performance is not there, capacity is not there, and the Comets are not there.

The Comet I is impossible costwise, rangewise, and payloadwise; Comet II is but very little better; Comet III is in between, on the ragged edge; Comet IV is more or less like what Douglas, Lockheed, and Boeing are working on at the moment—a unit that would be economical and practical speedwise, capacitywise, and costwise in relation to its potential revenue—if it is given a reasonable load factor.

For that reason I don't think anybody is going to think in terms of a Comet being used on the North Atlantic service short of maybe the Mark IV. I would have been willing to gamble on the Mark III if we could have gotten it three years ahead of anybody else, because we could have charged a higher fare for that extra speed, which would have helped us pay it off in three years, to liquidate it, and then we could throw it away when something better came along. I don't think the Mark III is going to be here any quicker, if as quick, as what Douglas, Boeing, and Lockheed are working on. Mark IV wasn't even mentally programmed short of 1960 when I was in England.

Q. **How about BOAC's comments that they are making money with the Comet?**

A. Well maybe—so long as you don't have any capital investment and the other fellow gives you the money to operate on and you don't have to earn it. They are not making any money on that airplane, I'll guarantee you. I would like to have what they have lost; I could retire and enjoy what few remaining years I have ahead.

Q. **You don't feel that there is any possibility of a domestic airline buying a foreign built jet?**

A. I don't, because of the same production and other problems that I encountered. In other words, if they can't produce something that is as good performancewise and as economical as what we can produce in the same time, it would be stupid for anybody to buy a foreign-built jet for domestic operation.

Q. **Captain, what have you told the manufacturers that you have to have in jet transports?**

A. We want a minimum of 550 mph, block to block; we want it with at least a Mach .9 to .95, preferably .95 design, so that we can push up against the sonic barrier—even go through it if we have to—and still be safe. We want a minimum of 100 passengers in the high-density, 80 in normal. We want a unit that is noiseless, a unit that we can brake, which means reverse thrust. How to get that, I don't know, but someone is going to be smart enough to design it.

Q. **I was thinking of operational costs; will actual operational cost be comparable to your Constellation?**

A. Yes, comparable to the Super Constellation.

Q. **What do you feel about the market for more than one jet transport; in other words, the manufacturers have the feeling that if one is sold, the others are pouring development money down the drain.**

A. That's what they thought when they built the Constellation, the DC-4, and DC-6 too. It has probably been thought about every airplane that's ever been built. I think there is a market for a minimum of two and possibly three, if they build the right type and get and keep control of the international market.

Q. **Could you give us an estimate of when you think you might be operating jet transports?**

A. 1958 or '59, at the earliest.

Q. **What percentage of your routes could use a jet transport of the general characteristics of the jets proposed by Douglas, Lockheed, and Boeing?**

A. Around 35%. Our routes are probably better suited for the jets than are the routes of other carriers. The jet fits on any route we are operating non-stop today.

Q. **How many airplanes would that involve?**

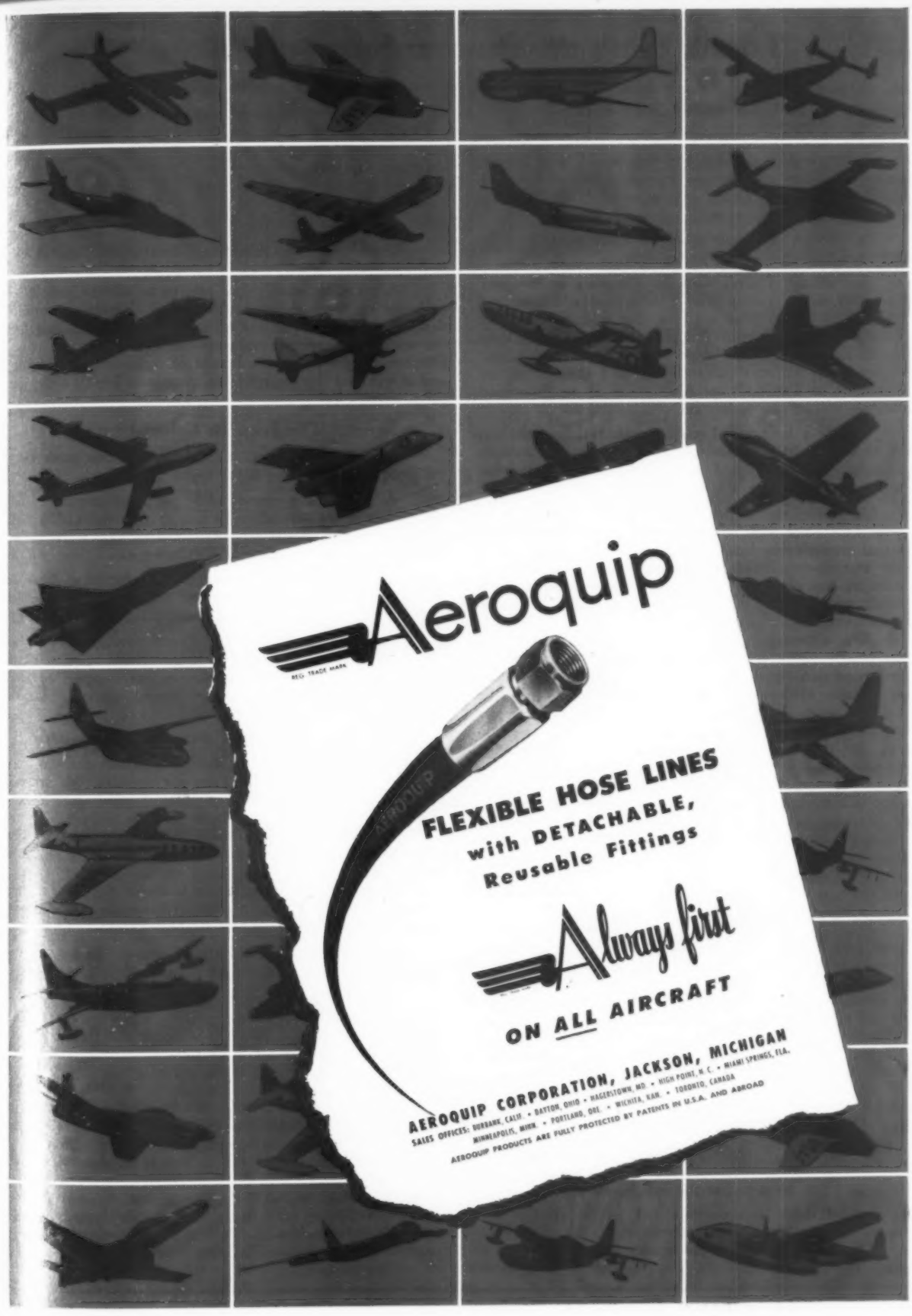
A. About 20. That's at $4 million apiece—then you have the spares, which means another $25 million; ground facilities mean another $10 or $12 million, and possibly more for maintenance.

Q. **You reportedly showed a lot more interest in the Boeing project than any of the other airlines.**

A. Yes, because they are making more progress. They are gambling their money. What they are doing is taking a basic commercial prototype and they are going to build one. They are also building that one as a high-speed tanker because the B-52, which is a 500-600 mph airplane, has to have a high-speed tanker.

Boeing is going to build that airplane and they have a two-way shot at it. They are gambling, sure, but it is a mighty good gamble on their part. They are making a lot more rapid progress, really moving, and I think they are ahead of everyone. They are taking all of the recommendations and suggestions of the entire industry, analyzing them, and trying to come up with something, so that when, as, and if they are sure that this unit will fly and do what they think it will, they will be prepared to move awfully fast and give the operators what they want.

All of the jet transport designs will need more horsepower than they are thinking of now. The straight jet is going to pose a major problem of noise at our municipal airports. Because the present Pratt & Whitney J57 is rated somewhere around 8000-9000 pounds thrust, they are figuring that 20% afterburner is needed for take-off and climb. Well,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AEROQUIP PRODUCTS ARE FULLY PROTECTED BY PATENTS IN U.S.A. AND ABROAD

"I don't think afterburners have any place"

that multiplies the noise. I don't think afterburners have any place on a commercial unit. With the Wright J67, which is in the 13,000-pound-thrust category, they would not need any afterburners.

If they had plenty of power they would have a more economical unit because they could derate it and get economy and reliability that they can't get out of anything that they have to push to a maximum.

Q. **Where are you going to meet your first jet competition?**

A. Where? I don't think we are going to have any jet competition for a long time. I think that when, as, and if there is a jet airplane available, the first place it will operate is on the transcontinental routes, where they can keep it under control. The next stage will be trans-Atlantic, and they may start almost simultaneously. So I don't think we are going to have anybody operating jets in our neighborhood before we will be able to buy and operate them.

Q. **As a long-time Lockheed operator, how do you look on the difference in concept on the jet transport between Lockheed and Douglas and Boeing on this engine location business; it seems to be a major difference.**

A. Yes, I think there are definitely two schools of thought; they both have advantages and disadvantages. Take the pod arrangement that Boeing and Douglas propose. It is more expensive to build, in one way. Each engine is an individual unit. From the safety angle, perhaps if you threw a blade you wouldn't throw it into the fuselage and cause more damage.

The advantage of the pod arrangement is that you keep your wing in balance at high speeds because of that cantilever action. So, if you want a less rigid wing, it would cost probably 2500 or 3000 pounds or more structure in the Lockheed wing design to keep its shape under pressures than it would under the pod arrangement.

But if you balance that extra weight of the four independent pods against that 3000 pounds, why, there isn't a lot of difference. With the Lockheed, you get the advantage of the lack of drag, you have a clean airplane, and you have the advantage of lack of noise in the cabin. You see, you have a 45° cone of noise from the inboard engine and that catches the tail end of the cabin. Now, in the pod arrangement, in spite of anything you do, you still get this noise. That's one of the problems of the Vickers Viscount and the Comet—and everything else that has been built.

The chance of throwing a wheel in the Lockheed design and cutting another engine out—I think that can be armored against. You can handle a fire much easier because you can contain the engines in a fireproof unit. And in the Lockheed, you have a simplicity of engine controls, of plumbing and of electrical apparatus, which you don't have in the pod arrangement. You have to have a set for each one but here you shove them all down one conduit into the tail, which saves weight and expense, too.

In addition, your engine compartment on the Lockheed is aft of the pressurized part of the cabin. There is no way of throwing a blade and hitting the cabin (which is a safety feature). That offsets the safety feature the pod proponents claim for their design.

Q. **You seem to like the Martin 4-0-4.**

A. I think it is the best twin-engine airplane that has ever been built for airline operation.

Q. **You seem to be pretty well bottled up as far as getting any more if your needs should warrant them.**

A. Well, if we needed more you would be correct, but I don't think we are going to need any more. If the business develops the way it should then we will put the 749 Constellations into more intermediate cities for two reasons: one competitive, and the other business. We'll give the Silver Falcons more to do on the short hauls and move the Supers down to the present pattern for the 749's.

Q. **How about Canada? Do you feel there is a great traffic potential there?**

A. Yes, definitely. You see, we've always had 90% or better of the interline business with Colonial for more than 20 years. Our purchase of Colonial is a good deal for the stockholders; it will multiply the service to those communities, they will get the benefit of up-to-date equipment, and it will save the taxpayers an average of $3,000 a day in subsidies now being paid to keep Colonial alive.

The Price for Colonial

Q. **What about this charge that has been made that the price you are paying is too high?**

A. There was a lot of study put in to determine that price, because we wanted to be fair to all concerned. I feel that price is fair for the property. Property values are sometimes pretty hard to determine ahead of time.

Q. **What about mergers? Do you feel that there is room for mergers, and do you feel that the Board should force mergers if the companies do not?**

A. No, I don't think the Board should force, or be permitted to force, mergers. I think that's a matter of economics, a matter of good business on the part of the industry itself. I think the Board should support mergers when they are economically sound.

Q. **What do you think about the cargo business?**

A. In certain areas it has an unlimited potential, in others it's not worth much. Take our territory. We are all one-way. In the first place, you have to get a good cargo airplane and that hasn't been built yet. The nearest thing to it is the Chase Avitruc because of its knee-high loading, its cubic content, its tail ramp and its economy—and it still has good speed.

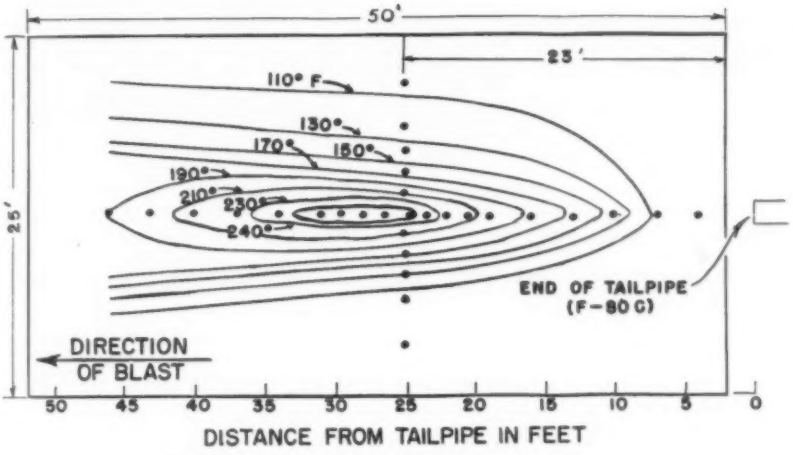
But that isn't going to be available for some time. The DC-4, the DC-6, and the Constellation are no good for cargo unless you have *very* long hauls and two-way traffic.

Q. **Eastern has probably shown more interest in the helicopter than any of the trunk airlines. Why is this?**

A. We are simply trying to keep abreast of the advancement of the art. In my opinion, when the day comes that they can cruise at 200 mph or better and their cost per mile isn't any greater, at the same unit capacity, than the orthodox airplane, why, I think anything within a 200-300 mile range is a helicopter potential.

I think there will be a new conception of power in the helicopter field before you get through. There are several experimental projects being advanced. One is the use of high-pressure air, instead of the jet, as a power plant to drive the rotors. I think this convertible airplane has a lot of promise, too, because it has an almost vertical take-off, like the helicopter, plus better straight-ahead speed. It has been proven experimentally, but it is going to take a long time to make it commercial, like everything else. • • •

AREA OF BLAST is shown by scorched runway.



TEMPERATURES OF BLAST are shown in diagram.

Jets Pose Airport Design Problems

Blast effect, harder tires, heavier aircraft add up to problems under study in USAF project.

By WALTER A. KILRAIN

JET ENGINES, although a boon to aeronautical engineers, the military, and eventually the traveling public, may prove to hold an assortment of headaches for the men who build and operate airports. The main reasons:

• **Jet aircraft are heavier:** a jet-powered B-50 bomber is roughly three times as heavy as yesterday's B-17;

• **Jet tires are thinner and harder:** the greater weight of the airplane is transmitted to the runways with a vengeance;

• **Jet exhaust is hotter: the exhaust** streaming from behind USAF fighters may leave the tail pipe at 1300° F., traveling at 1500 feet per second. With afterburners and rockets these figures may soon read 3500° F. and 2000 to 8000 feet per second.

• **Jets involve longer take-off:** Since the efficiency of the jet engine is relatively low when the airplane is standing still, runways must be long enough to allow it to gather power as the plane gathers speed. The jet-powered F-84 fighter needs a runway two and one half times as long as did the piston-engine F-51.

• **Jet fuel is less volatile:** when it seeps down into cracks in the runway or into porous runway surfacing it stays for a longer time and consequently has more opportunity to affect the material.

These and related problems, which may bring out new operating techniques and new construction materials, are now under study by the Air Force. In a paper titled "Requirements of Jet Aircraft on Airbase Design," Lt. Col. Joe R. White reports on the progress to date.

The design of airbases used to be governed by the gross weights of the planes involved. Now it must be determined by the steadily lengthening landing and take-off runs. What this has done to airport runway lengths is shown in the accompanying table on page 38.

The longer runs are brought about both by the nature of the jet engine itself, as explained above, and by the higher wing loadings now common in jet aircraft. A length of 15,000 feet should do for the foreseeable future. Just how much length is added to the actual landing roll of the aircraft for the sake of safety is determined by whether the field is designed for emergency use, minimum operations, or full operations.

After the airplane is down on the ground there is the problem of where to park it. Here the effect of the hot, fast-moving exhaust influences decisions about how close to spot the aircraft and what sort of surface to put beneath them.

More Apron Space

Apron space is determined in the USAF by multiplying the plane's length by its span, then multiplying the result by a constant. A figure of 3.5 is used as the constant with conventional engines and with bombers and cargo planes; with jet fighters and trainers the constant has to be increased to 4.4. Even with this increase, with 147 feet between the tail of one plane and the nose of the one behind it, the 90° F. blast is still traveling 30 miles per hour when it reaches the plane in the rear.

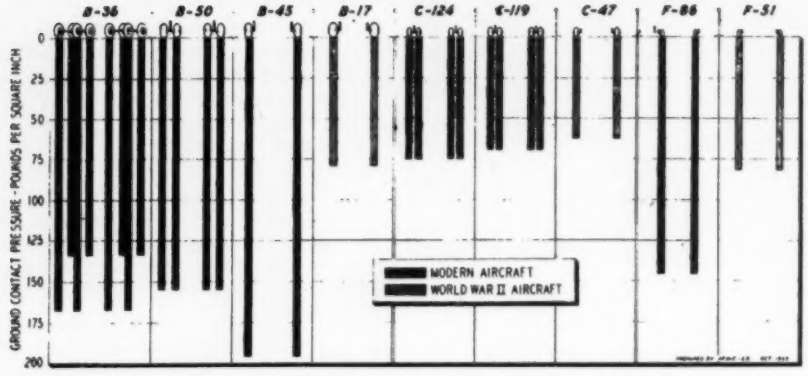
Spacing on the apron can solve the problem of blast effect on other aircraft; solving the problem of the effect on the apron itself is not as simple. Besides the obvious factor involved in the heating of the surface—the temperature of the gas leaving the exhaust pipe—there is also the height of the tail pipe above the ground and the angle at which the exhaust strikes the pavement. Also important is the length of time which the airplane remains in the same position.

In order to explore the problem the USAF set about studying the heat and blast effect of all of its jets.

After a time-and-motion study the Air Force found that the average plane spent 3½ minutes warming up on the parking apron, 30 seconds on the runway, and 14 minutes on the maintenance apron. These 14 minutes were broken down into two cycles of seven minutes each: during each cycle the first 5½ minutes were spent with the engine running at only 40% of full power, while during the remaining 1½ minutes it was run at full throttle.

During the tests thermocouples were planted in the surface of test patches of pavement and at depths of one inch and 2½" below it. The engines were then run for the average times and

The Planes Grow Heavier...



GREATER PRESSURES on runways are caused by thinner, harder tires as well as by increased aircraft weights.

for 50% and 150% of average. During one of the 150% runs the pavement temperature reached figures between 260 and 300° F.

Data from the thermocouples showed that the temperature on the surface shot up quickly, but fell off just as quickly during the beginning of the second seven-minute cycle, when the engine was throttled back again to 40% of its power. Underground, however, the temperature maintained a steady climb, with only the minor ups and downs of a shallow sine curve.

Although the experiments are continuing, the USAF has reached two conclusions:

• **Flexible pavements** are harder hit than rigid ones; the joint sealers in rigid pavements, however, are noticeably affected;

• **Open-graded asphaltic concrete** stands up better under heat and blast than dense-graded, hot-mixed asphaltic concretes.

As a result of its conclusions the USAF has decided that, for permanent airfields:

• **Concrete will be used** for maintenance aprons, warm-up aprons, and runway ends;

• **Asphalt will be used** for taxiways and the centers of runways.

Rigid pavements, such as concrete, not only stand up better under heat and blast, they also are better able to carry the loads imposed when a heavy aircraft touches down. The rigid pavement transmits the load over its whole area, while the flexible pavings distort at the point of contact, concentrating the load.

The subgrades beneath the pavement, as a result, differ in their requirements. With a rigid pavement the subgrade can be of low quality, since it will not be asked to bear a concentrated load; with a thin, flexible surface the subgrade must be of high quality.

High tire pressures, made necessary by small, lightweight tires, tie in closely with the gross weight of the aircraft when the effect on the runway is considered. Current USAF design studies assume tire pressures of 100 pounds per square inch, but there are aircraft in production with more than 200 psi in their tires, and contemplated pressures go as high as 260 psi.

Thicker, rigid pavements, lower tire pressures, and the use of two or more tires per landing gear axle are among possible solutions to the load problem. A test track now under construction in Ohio will be used to check present data on the means of beefing-up existing pavements.

The spillage of jet fuel poses serious problems not only because of the nature of the fuel itself but also because the jet engine is more likely to spew out fuel than the piston engine is. Serious disintegration may result if the pavement is porous, since the jet fuel is less volatile than the gasoline used in piston engines. Once it leaks onto the pavement and into small crevices it is likely to stay there for relatively long periods.

Field tests of sample overlays are now being made at seven jet airfields, heat and blast tests are being conducted in USAF laboratories, and traffic tests are being run to determine the qualities of flexible pavements in which the binding material is tar and rubber. These mixtures are also being tested to determine their resistance to jet fuel.

The Air Force hopes that the tar-and-rubber mixtures will stand up well under traffic and fuel hazards, but is cautious about predictions of what will happen to them under the blast of 3500° F. exhaust gases.

The Air Force, Lieutenant Colonel White notes in his study, is well aware that it will have "the problem of flying tomorrow's aircraft off of yesterday's airfields." Commercial operators, equally aware that they must do the same, can be expected to keep a sharp eye out to see how the USAF does it. • • •

...And Longer Runways Are Needed

Aircraft Category	Aircraft Type	Take-Off Gross Weight	*Assist	Basic Runway Length (NACA Day)	Runway Length El. 3,000′ Temp. 100°F.	Increase /1,000′ El. 13.3°F.
WORLD WAR II						
Fighter	F-80	12,000 Lbs.	NONE	3500	4400	8.6%
	F-47	19,400 Lbs.	NONE	6000	8200	12.2%
Bomber	B-26	38,000 Lbs.	NONE	6400	9400	15.6%
	B-17	65,000 Lbs.	NONE	5900	8190	
	B-24	65,000 Lbs.	NONE	6700	8400	8.5%
	B-29	130,000 Lbs.	NONE	7400	10,000	11.7%
Cargo	C-54	82,500 Lbs.	NONE	6400	7600	6.3%
MODERN						
Bomber	B-50	173,000 Lbs.	NONE	9700	12,500	9.6%
Fighter	F-84*	23,600 Lbs.	2000# ATO	7500	11,900	19.6%
	B-36	326,500 Lbs.	NONE	10,200	14,300	13.4%
	B-36*	357,500 Lbs.	JET PODS	7800	12,100	18.4%
	B-45*	115,000 Lbs.	8000# ATO	10,400	15,200	15.4%
Cargo	C-124	210,000 Lbs.	NONE	9600	11,200	5.6%

** Jet powered or assisted*

NEWS BRIEFS

Leslie E. Lynde, vice president and Washington manager of **Westinghouse Electric Corp.,** has been named manager of the firm's Aviation Gas Turbine Division at Philadelphia.

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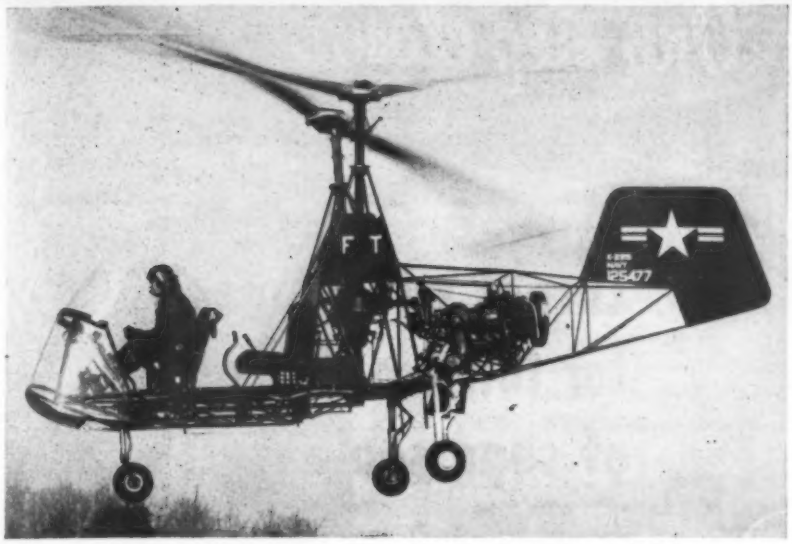
Fred M. Glass, director of aviation for the Port of New York Authority, has been elected president of the **Wings Club, Inc.,** in New York City.



BOEING'S 502-2 turbine engine set records in the Kaman K-225.

Turbine Boosts 'Copter Performance

Useful load, ceiling, rate of climb all are improved with Boeing engine in Kaman K-225.

THE TURBINE engine is emerging as one of the most promising contributions to recent helicopter development. Nowhere is this more apparent than in the U. S. Navy's results with the Kaman 225 helicopter modified to accommodate the Boeing 502-2 geared turbine engine. While some data on the modified K-225 have been disclosed previously, the U. S. Navy has now released pertinent performance data and operational problems for use in this article.

Some of the more important conclusions of the Navy tests, conducted by Kaman, include:

* **Performance** of the K-5 (as the modified helicopter is designated) equals or exceeds performance of the regular K-225, despite the 28.5% higher shaft horsepower of the latter.

* **The K-5 has 693.3 pounds** more useful load, operates at 2,500 pounds gross weight.

* **Service ceiling** of the K-5 is twice that of the piston-engine K-225.

* **Maintenance** on the turbine-powered Kaman is about half that of the regular piston-engine model; inspection periods are at 50 rather than at 25 hour intervals.

* **In simultaneous vertical take-offs** at maximum power the K-5 outdistanced the piston-engine model by nearly two to one, climbing at 700 feet per minute compared with 440 fpm for the K-225.

The Boeing 502-2 turbine, rated at 210 horsepower, proved to have many characteristics ideally suited to helicopter requirements. Fuel consumption was not one of these. The 502 was designed for applications where fuel consumption was not so critical and ruggedness factors were more important. Specific fuel consumption of the 502 is 1.4 pounds per brake horsepower per hour. This contrasts with 0.60 pounds per horsepower for the piston engine version.

13% of Gross Weight

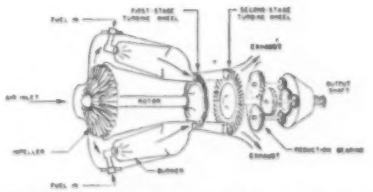
The specific fuel consumption of the engines does not present an entirely true picture of the case. In the piston-engine helicopter the special engine cooling fan, cowling, and clutch (used between the engine drive and rotor) all absorb horsepower directly or by the addition of weight. The installed weight of the Boeing 502 represented only 13% of the 'copter's gross weight versus 25% for the piston engine.

Effectively this means the piston-engine fuel consumption per horsepower delivered to the rotor is more like 0.75 pounds per horsepower and that of the turbine engine 1.15 pounds. Furthermore, engine manufacturers are now producing large turbine engines with fuel consumption as low as 0.62 pounds per horsepower hour. This points the way to similar advances in helicopter powerplants.

The principal result of the high fuel consumption is to eat into the higher payload of the K-5 or cut the range. The turbine-powered K-5 shows better payload for flights of less than four hours duration (see chart) or flights of up to 290 miles. The accompanying charts illustrating this point are from a paper presented before the Society of Automotive Engineers by William B. Anderson, of Boeing Airplane Company.

The single most important characteristic of the Boeing 502 would appear to be the design (see sketch) which isolates the gas-producing section (made up of the compressor, compressor drive turbine, combustion chambers, and accessories) from the power output section (including the power turbine, reduction gearing, and power output shaft).

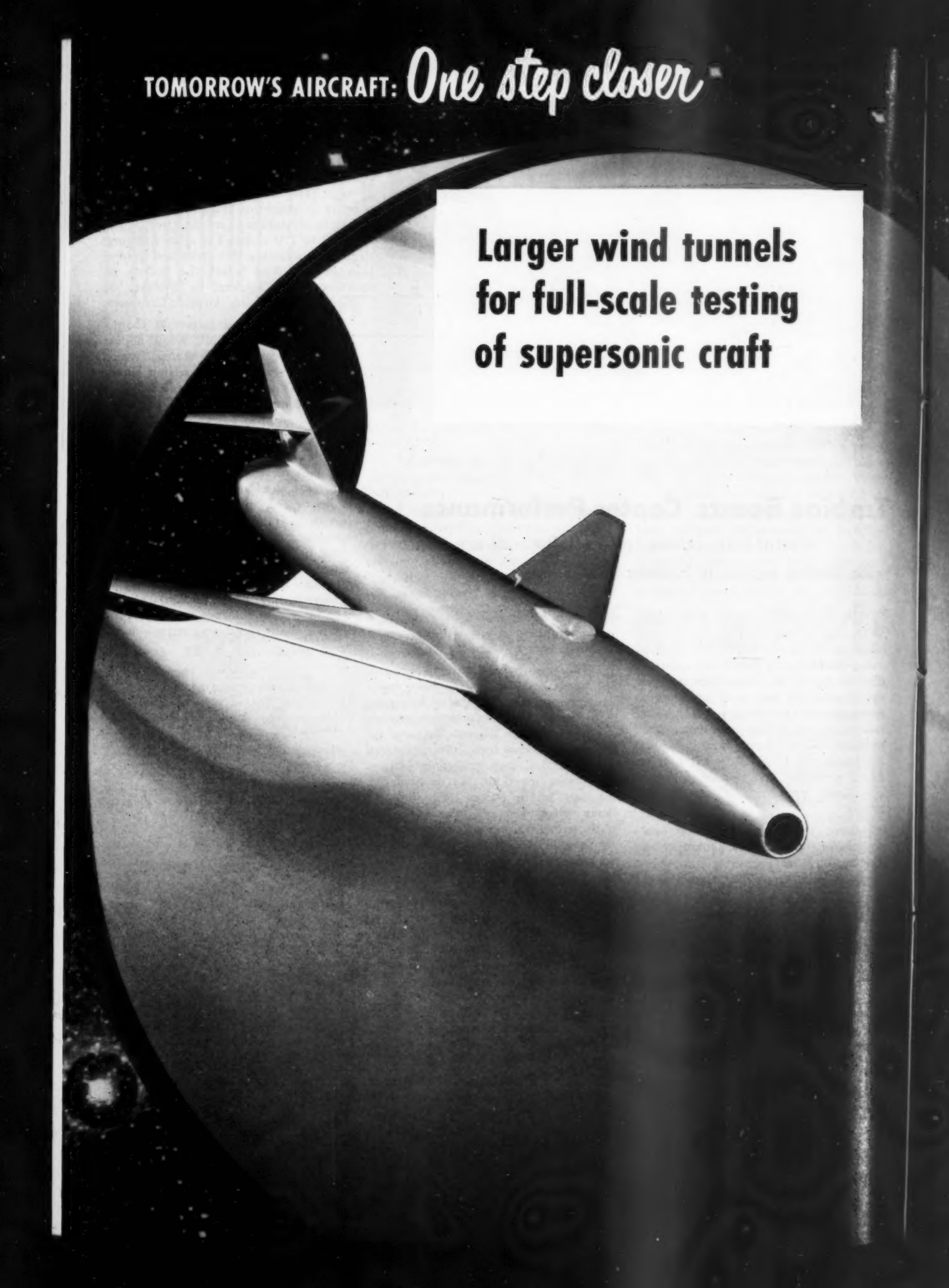
This means that output shaft speed and rotor speed are independent of basic engine speed and power. Thus power can be at its maximum level and rotor speed kept low. Power output is almost constant from 2,000 to 2,800 revolutions per minute of the output shaft. In practice most efficient hovering was achieved at 2,650 output shaft rpm and 230 rotor rpm. During such operations engine shaft speed was maintained at



BOEING 502—Schematic flow diagram.

INSTALLATION details of Boeing 502.

TOMORROW'S AIRCRAFT: *One step closer*



Larger wind tunnels for full-scale testing of supersonic craft

The largest rotating system in the world is now being built by Westinghouse for installation in the United States Air Force, Arnold Engineering Development Center's Propulsion Wind Tunnel at Tullahoma, Tennessee. This giant wind tunnel will accelerate the full-scale testing of turbo- and ram-jet aircraft engines as well as components of planes and missiles, in the 2000-mph range . . . well into the supersonic speeds of tomorrow's air age.

Westinghouse applied a new concept in wind tunnel engineering by designing a single axial flow compressor to feed both the transonic and supersonic tunnels from a single drive shaft. Most powerful of its kind ever built, it uses four motors in tandem—delivering over 200,000 hp to drive five giant compressors whose full output is translated into wind speed. This single-unit system is an imposing spectacle of man-made machinery, barely suggested by its over-all length of 575 feet and 7000 tons of weight!

Thus, Westinghouse creative engineering and productive skill are assisting the U. S. Air Force in providing a facility which will simulate flight under a wide range of transonic and supersonic conditions, greatly expanding the horizons of aircraft and missile development. And the experience and ability devoted to such an installation demonstrate once again the unique capabilities in the wind tunnel field . . . all paving the way for new research beyond today's barriers, basic to continued military and commercial air leadership. Proving, above all else, that you should look to Westinghouse when you have a problem in aviation. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-91008

Above is an artist's sketch of Propulsion Wind Tunnel in which Westinghouse's 200,000-hp driven compressors will create supersonic speeds. Compressor blades are over two feet across the face, six feet long, weigh some 3500 pounds and have a tip speed of 650 mph with a centrifugal force of 800 tons constantly pulling at their roots! At the right is a stator for one of the two massive 83,000-hp synchronous motors which are over 21 feet high, weigh 225 tons and are at least one third larger than any other synchronous unit ever built.

THE SCOPE OF WESTINGHOUSE IN AVIATION

Basic aircraft systems

Turbojet Engines, Fire Control, Radar, Autopilots, Communication Equipment and Electrical Systems.

Ground equipment

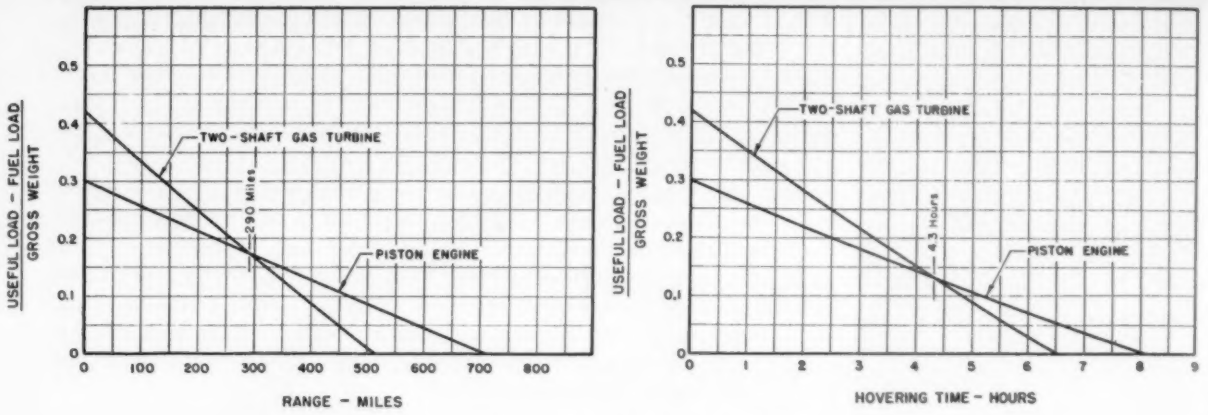
Wind Tunnels, Airport Lighting, Industrial Plant Apparatus.

Air-borne system components

Transformers, Rectifiers, Instruments, Gyro-motors, Temperature Control Panels, Generating Equipment and System Control, Circuit Breakers, Contactors, Motors, Actuators and Hoists, Electronic Tubes, Magamps, Micarta®.

YOU CAN BE SURE... IF IT'S

Westinghouse



ADVANTAGES AND LIMITATIONS of turbine power for helicopters are shown above.

36,000 rpm, full rated power.

The separate gas producing and power output sections, joined simply by the gas coupling of the combustion gases, also eliminate the need for a special clutch between the engine output shaft and rotor. Clutches absorb considerable horsepower and are a major maintenance problem.

The effect of the improved speed control is to get greater lift and improved rates of climb with even less horsepower. With relatively minor variations in engine output shaft speed (2,650-2,800 rpm) and rotor rpm (242 to 229 rpm) hovering altitude ranged from five feet to 145 feet altitude. This was at 183-184 hp and with ground effect.

At 2,500 pounds gross weight and 59° Fahrenheit, the K-5 had a sea level rate of climb of 975 feet per minute at take-off horsepower and 37 miles per hour speed. This contrasted with 900 fpm for the K-225. The higher rate of climb for the turbine-powered K-5 became more pronounced at altitude. The K-5 continued to climb at better than 250 fpm at 12,000 feet altitude when the piston-engine K-225 had reached its ceiling. Lack of oxygen equipment on the K-5 limited actual altitude testing.

Some of the problems highlighted by the Kaman tests:

• **Hot day hovering** performance will prove the critical design criterion requiring greater power reserve, possibly through use of two engines, one for cruise.

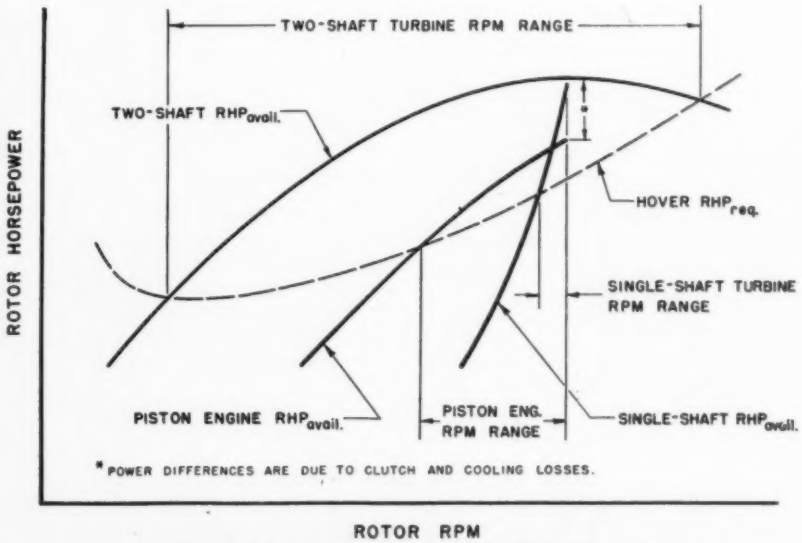
• **Fuel control nozzle** on the B-502 had to be increased from 10.5 gallons to 12 gallons to accommodate JP-3 instead of diesel oil, otherwise top rpm was 2,000 short of take-off 37,000 rating.

• **At altitude** throttle sensitivity became critical, increasing to a point where it was difficult to control rpm without hunting and overcontrol. Boeing said this can be corrected with a "rather simple" altitude compensator.

• **The second stage** fuel control governor, made by Woodward Governor Co., proved troublesome. Only after it was removed was constant rpm possible.

• **Turbine engine heat** dissipation was about three times Boeing's specification, calling for improved oil cooling system utilizing two coolers.

• **Turbine bucket failure** occurred on approach to landing but no appreciable loss of power followed. Engine damage was minor and repairs were made "in a few hours" time.



CHARACTERISTICS of Boeing's two-shaft turbine engines are well suited to helicopter service when contrasted with other engines.

FLIGHT PERFORMANCE SUMMARY

Kaman K-5 Helicopter
Boeing 502-2 Turbine

	Gross Weights	
	2300 lbs.	2500 lbs.
Hovering ceiling, ft	5,000	1,200
	10,500*	8,600*
Service ceiling, ft.	12,200	10,500
Absolute ceiling, ft.	13,750	12,200
Max. R.O.C. at speed for best climb, ft./min.	900	700
	1,180*	900*
Max. vert. R.O.C. at S.L., ft./min	344	192
	700*	400*
Max. true airspeed, mph		70
		72

** Figures are for take-off power. Other figures based on normal rated power.*

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IATA Urges Realistic Performance Rules

New ICAO code should add to efficiency without detracting from safety, technical group says.

INTERNATIONAL airlines will make thorough study of the impact on their operations of the proposed new "rational" performance requirements code being drafted by the Standing Committee on Performance (SCP) of the International Civil Aviation Organization, according to the recommendations of the International Air Transport Association's Technical Committee.

During the recent Sixth Annual Technical Conference held by IATA in San Juan, Puerto Rico, this question was discussed at length in addition to the subject of transport helicopters (AMERICAN AVIATION, May 11) and the problem of terminal area traffic handling.

The IATA group stressed the desirability of arriving at a new performance requirements code which will add to the efficiency of air transportation without detracting from its present level of safety, but which would not sacrifice that efficiency for the sake of theoretical and economic restrictions on performance. The ICAO is currently meeting in Paris in the hope of completing proposals which will be put to an ICAO divisional meeting in March, 1954, and subsequently to the ICAO Council.

It was felt to be particularly important that performance requirements be as simple as possible in their framing and application; that they be flexible enough to permit local treatment of peculiar local problems; and that they allow operators a certain amount of latitude within the statistical variables expressed in the requirements. The IATA group stressed the danger of premature application of the new performance standards to turbine aircraft, whose operation has not yet been extensive enough to provide sufficient background.

The imperative need to develop sufficient meteorological statistics for all international airports was urged as a prerequisite to the incorporation of temperature, humidity, and wind accountability in performance codes.

While it has been the universal practice to specify take-off safety speed (V_2) in terms of a constant times the stalling speed, the committee felt that climb stability, rather than stalling speed, is the more important factor. It is therefore recommended that V_2 should be chosen as a function of zero rate-of-climb speed with one engine out.

Retroactive application of the new operational performance requirements to existing types of aircraft which have already proved their safety under present codes was opposed by the IATA Technical Committee.

The group asked for a careful examination in the ICAO performance committee of the proposed incident rates on which requirements will be based, since, in a large number of cases, aircraft will not always be operated up to their maximum gross weight, or actual performance will not be critical because of other factors, such as the availability of longer runways.

More simple and streamlined national regulations affecting the re-certification of aircraft now required after minor modifications were urged.

It was also recommended that equal credit be given to procedures which are operationally equivalent to the use of auto-feathering propellers, lest uneconomic handicaps be imposed on operators. A number of possible improvements in aircraft design and instrumentation put forward by the IATA Technical Committee included: instruments to give the pilot a better idea during take-off of distance traveled along the runway in relation to acceleration achieved; a more accurate fuel-remaining gauge; propellers which can always be feathered at will; more accurate outside air temperature indication; higher permissible rates of descent without speed restrictions within the normal cruising range; more satisfactory icing rate indication.

On the subject of air traffic control in terminal areas, the IATA Technical Committee rejected the idea that full use of traffic handling capacity of airports can be achieved only by the use of some super-electronic computer.

Recognition was given, however, to the limitations of the ability of human beings to exercise effective control over increasing volumes of traffic. It was therefore considered necessary to keep traffic patterns as simple and standardized as possible and to keep the many variable factors in the landing process as constant as operations will permit.

The IATA group considered that proper timing of the intervals at which aircraft could be fed from the holding stacks into the landing process should be achieved, not by variations in speed, but by adjustments in the length of path to be flown by the aircraft in the holding pattern. Air traffic control should always be based upon ground aids which the pilot can use directly, aided by ground radar, but never exclusively dependent on it. This guards against the possibility of radar failure and lifts some of the load from the controller.

Airborne radar, while valuable in other functions, such as weather detection and terrain clearance, is not a useful method of ensuring safe separation between aircraft, the committee declared. It also urged that air traffic controllers should have the ability to vary the usual practice of giving first take-off to whatever aircraft arrives first at the head of the runway. This will probably make the provision of by-pass areas on the runway mandatory.

The transcript of the Technical Conference will be published in book form.

• • •

With a bond issue of $10 million approved by the voters, Oakland Municipal Airport is going ahead with plans for a new terminal building and adjacent highways, shown in white, above. Runways and parking facilities will also be improved.

LEADERSHIP
DEMANDS
CONSTANT
ACHIEVEMENT
More defense
for your d

ur dollar...

U.S. Air Force delivers it with Lockheed Starfire

Here's a military jet that does an outstanding job—*and saves money in the process*—the F-94C Starfire, a reliable new interceptor for home defense.

Economy is important with the Air Force, and here's how the Starfire helps on the budget.

An economical airplane is one that performs its mission with greatest efficiency and offers maximum availability on the ready line. Maximum time between servicings means *lower maintenance costs*. More important, it means *fewer planes are needed*. The U.S.A.F. provides both types of economy with the Starfire.

Since the Lockheed Starfire is a 2-place interceptor, it utilizes the cooperative efficiency of a 2-man team to compute the tactical problem and perform all the other split-second operations of intercepting an enemy at 600 mph-plus speeds.

No fighter-interceptor can get into the air quicker—none can climb faster—a valuable combination that saves vital minutes in reaching enemy bomber level.

The all-weather Starfire is equipped with automatic electronic controls—Hughes Radar System, Westinghouse Automatic Pilot, Sperry Zero Reader—and other advanced devices, making it very nearly an automatic airplane.

Reports coming in from the field indicate that Lockheed has again produced a "pilot's airplane." Air Force pilots like the Starfire and like to fly it. They find it simple to fly and rock-steady under actual instrument conditions.

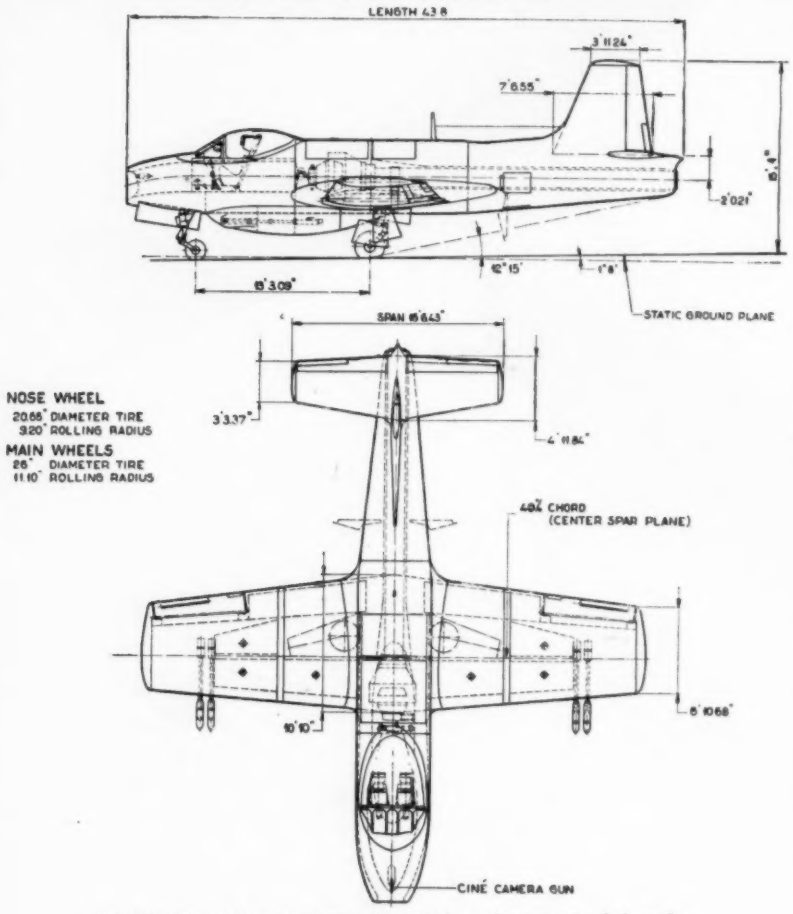
Here is the happy combination of 4 important factors in one reliable airplane: (1) Superlative performance—(2) Easy maintenance—(3) Pilot popularity—(4) More defense for your dollar.

Lockheed AIRCRAFT CORPORATION

BURBANK, CALIFORNIA, AND MARIETTA, GEORGIA

LOOK TO LOCKHEED FOR LEADERSHIP

PROFILE OF THE FOKKER S-14



DRAWING OF S-14 shows three-inch rockets suspended under wing, 20 mm Hispano cannon mounted in pouch under fuselage.

MSA Consolidates Fokker Progress

By William D. Perreault

AMSTERDAM—The "off-shore" procurement order for some 500 British Hawker Hunter aircraft to be built in Holland and Belgium assures Fokker Aircraft the largest order in the company's history and provides it with a means of consolidating its position while starting work on many new and promising lines.

The $159 million order for Hawker Hunters, placed by MSA and NATO, will probably carry Fokker through five years unless military demands require accelerated production. The company is nearing completion of some 330 Meteors which have been in production for the past three years.

Officially Fokker has not yet been notified of the order, which will be split between the manufacturing facilities of Holland and Belgium, and final details are probably three months away. Informed estimates place initial production with British-supplied parts as being 18 months off.

Meanwhile decisions must be made as to what share of production will be handled in Belgium. That country will certainly handle the Rolls-Royce Avon engine production at Fabrique Nationale, Liege, and probably will produce landing gears and other parts of this nature.

Within Holland production will be split between Fokker, Aviolanda and de Schelde. Total employment of these plants is about 3500. With the completion of the Meteor contract and some relaxation on present subcontracting work, Fokker officials feel no appreciable increase in personnel will be required.

Meanwhile Fokker is busy with several key developments:

• **New management:** Since the death of P. J. C. Vos several months ago, the company, which is largely owned by the government, has been without an active head. Two members of the board of directors, neither with aspirations to assume control, share direction.

• **New ownership:** Within the next few weeks the government will dispose of its stock in Fokker, selling it to a leading but unnamed group of bankers. There are no apparent heirs to the Fokker management in this group.

• **New planes:** The Government's agreement to loan Fokker some $4 million for the construction of two prototype F-27 twin-engine transports, already approved by the second, or lower, house, is conditional on sale of the company stock to the banking interests.

The F-27 design has been undergoing more changes, most important of which is the use of the more powerful Rolls-Royce Dart turboprop engines rated at 1600 horsepower each. These boost cruising speed from 246 miles per hour to 254 mph. KLM will get the two prototype F-27's for service testing and possible service under the proposed program.

• **S-14 jet trainer:** Fokker has an order for 20 of its S-14 side-by-side jet trainers. Company hopes are still high for larger production of this model and production-type jigs are being made. Hope is not yet dead that the U. S. Government might contract with Fairchild for U. S.-built versions of the trainer, which was licensed by Fairchild for the USAF trainer competition won by Cessna. In the past few weeks Fokker has been asked for delivery times on a service test quantity of S-14's.

Meanwhile the company has completed tests on the Derwent-powered S-14 and by mid-May will bring it into the factory to replace the 3470-pound-thrust Derwent engine with a 5100-pound-thrust Rolls-Royce Nene. This will not require much change in the aircraft except for a slight increase in aft fuselage diameter.

Fokker will also install the NATO-recommended instrument panel in the "souped up" S-14. Prior to the actual changeover the S-14 will also be equipped with external armament packs (see drawing) and rockets, making it useable as a tactical trainer. Armament will include two 20 mm guns in an underfuselage "radome" with eight three-inch rockets carried under the outer wings.

Gross weight of the Nene-powered S-14 will be boosted from 11,800 pounds to 12,980 pounds and the average cruising speed from 366 mph at 30,000 feet to 384 mph. Maximum cruising speed will be up to 515 mph. • • •

A MILITARY COMMENTARY . . . . .

Admiral Radford and the Worried USAF

THE AIR FORCE is reeling from the most staggering one-two punch it has received in years. The collective Air Force jaw dropped a couple of inches last week when Defense Secretary Wilson announced that he was lopping $5 billion off the USAF's budget for the forthcoming year.

That was bad enough, but the blow which really sent the Air Force into the ropes came a few days later when the President announced that he was naming Adm. Arthur W. Radford chairman of the Joint Chiefs of Staff.

The USAF had been hoping for one of its alumni—Spaatz, maybe, or perhaps Vandenberg. If one of the Army's candidates—Collins, Ridgway, Gruenther, or Clark—had been named, that would not have been too bad. Even if that horrible possibility, a Navy appointment, had occurred, the USAF could probably have swallowed its disappointment if the appointee had been, say, Carney. But Radford!

For it was Radford, you recall, who gave the Air Force the hardest time it has ever had in public debate when he led 1949's "revolt of the admirals" and blasted the USAF in general, strategic bombing in particular, and the Convair B-36 in specific.

Now Radford is sitting in the top seat in the military and the big question in Air Force circles is, of course, what will this mean to the USAF's plan for maintenance of a strong, long range strategic bombing force?

Probably that most important point about Radford's appointment is the fact that the "roles and missions" of the three services are in for another review, to be conducted by the Joint Chiefs, with Radford in the driver's seat, some time in the fall. There have been a number of such reviews in the past, but the USAF has always come through smiling, with prime responsibility for strategic bombing operations.

No Secret

Radford has certainly made no secret of the fact that he thinks carrier based bombers should carry a stronger burden of responsibility insofar as strategic bombing operations are concerned. Like many another Navy man (and quite a few observers of the military scene), he feels that mobile carrier task forces, operating jet bombers from close to the enemy shoreline, stand a better chance of performing an effective mission than do long-range bombers of the "intercontinental" variety.

Thus, the forthcoming review takes on added importance, in view of Radford's open opposition to Air Force thinking in the strategic bombing field, and in view also of what appears to be a lack of sympathy for Air Force operations in general on the part of Secretary Wilson.

To what extent Radford will oppose Air Force strategic bombing is not known, since for a long time before his appointment and in the short period since, he made no public statements on the subject. However, although he reportedly has moderated his opinions somewhat, it is unlikely that after 37 years of Navy service he has moderated them enough to give aid and comfort to the Air Force.

One important point, not generally known, is that Radford's appointment does not give the Navy two votes on the JCS, which could produce a stalemate on important issues. The chairman is not a voting member of the group; he is what might be termed a panel moderator.

This is not to imply, however, a lessening of his influence. The chairman is undoubtedly the most important member of the JCS. For one thing, he directs the operations of the Joint Staff of the JCS, the working level group. For another, he is also the personal military advisor to the Secretary of Defense; it is in this respect that he will wield his widest influence.

Public Statements, Private Ear

In his new post, Radford cannot afford to be as publicly partisan to Navy views as he has been in the past. It is not his public statements, however, which worry the Air Force. The worry lies in the private statements Radford will make to the Secretary of Defense. The USAF has good cause for concern in the forthcoming review of roles and missions.

Radford still has to be confirmed for the job and his opinions on strategic bombing and the Air Force in general will certainly get a good airing in the confirmation hearings. You can rest assured that the Air Force will see that Congress is supplied with the proper questions to ask.

While on the subject of the Joint Chiefs, it is interesting to note that Gen. Nathan F. Twining, incoming Air Force Chief of Staff, will find himself in a peculiar position.

The reason for reappointing an entire slate of Joint Chiefs including a new Chief of Naval Operations when the term of the current CNO still had two years to run, was to get an entirely new group which had not been associated with the Truman military build-up program. Theoretically, the new group would have no prejudices against the Wilson-Eisenhower military economy program.

This is true (again theoretically) in the cases of Radford, new CNO Adm. Robert Carney, and new Army Chief of Staff Gen. Matthew Ridgway. All were in command positions and not directly associated with the Joint Chiefs of Staff. But in Twining's case it is different. Not only was he Vice Chief of Staff, but he also served a good part of last year as Acting Chief of Staff, during the illness of Gen. Hoyt S. Vandenberg.

Thus, Twining was as closely associated with the now defunct 143-wing Air Force program as was Vandenberg. He will now find himself in the odd position of justifying a stretched-out 120 wing program before Congress, where last year he advocated 143 wings at an earlier date than that now planned for the 120.

. . . JAMES J. HAGGERTY, JR.

Overseas Loss Tied to Domestic Profit

A RE-SHUFFLING of international routes operated by U.S. air carriers could result if a civil court decision earlier this month is allowed to stand.

Gist of the decision handed down by the U. S. Court of Appeals for the District of Columbia Circuit was that the Civil Aeronautics Board erred when it refused to offset against international losses of Chicago & Southern Air Lines' profits realized by the line on its domestic system.

Court's vote was two to one and was taken on appeal by the Post Office Department, which challenged CAB's decision in the C&S mail rate case.

CAB, "for sound reasons of economic policy" refused to offset C&S's "excess profits" of $654,000 for domestic operations against "need or subsidy requirements for international operations."

The Post Office did not question CAB's authority to fix rates separately for different operating divisions of a carrier, but did insist that the end result of fixing rates for a carrier must not go beyond that point where the total subsidy exceeds the need of the carrier as a whole. Appeals Court Judges Proctor and Bazelon, forming the majority, agreed with this contention.

"In our opinion," they said, "the failure of the Board to make the offset is at variance with the plain meaning of the Act which speaks in terms of a carrier as a single entity; not as divisible units conducting separate operations."

The decision, if it stands, would apply not only to C&S (now Delta-C&S), but to Braniff, TWA, and Northwest. It would not affect directly carriers such as American with a short extension into Mexico or National with its Havana route. These are considered by CAB to be "stub-end" operations for which the same mail rate applies domestically and internationally.

But if it stands it could cut into the subsidy-free status of the domestic systems of the four carriers involved. This could, conceivably, lead to some route trading if the lines did not want to be saddled with unprofitable international segments.

But the court decision had a dissenting opinion by Judge E. Barrett Prettyman. He agreed with the CAB philosophy claiming "the more robust segment of the industry ought not to be burdened with the obligations of the economically weaker part."

Right now, parties are working on the proper strategy to use in seeking a reversal of the Court decision.

Since it will wind up in the Supreme Court, in any event, there is no likelihood of a final decision before the Fall Session of that Court and perhaps not for the rest of 1953. • • •

Travel Agents Face Commission Cut

THE DOMESTIC airlines plan to change drastically their methods of doing business with about 1,600 travel agents in the U. S. and Canada, provided the Civil Aeronautics Board and the Canadian Air Transport Board approve.

Agents' commissions on long-haul traffic will be cut substantially. At the same time the agents will be given more incentive to develop domestic tour traffic.

The American Society of Travel Agents immediately protested the commission cut and said it would fight the proposal before "such tribunals as may have jurisdiction over the matter."

Changes agreed upon at the recent Air Traffic Conference meeting in Chicago include:

• **The 5% commission** on domestic point-to-point travel will be continued, but an agent can receive a maximum of only $1.50 on one-way tickets and $3.00 on round-trip, circle-trip, and open-jaw tickets. There will be two exceptions:

The $1.50 and $3.00 maximums will not apply (a) to an agent whose office is located 20 miles or more from the nearest other authorized agent and who is appointed by a member airline as a special agent to receive commission on the same basis as at present; (b) where an airline serves a community but has no city ticket office, and ap-

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T. H. Beck, Manager of Engineering. Is an engineering veteran of over 22 years in the aviation and related industries.

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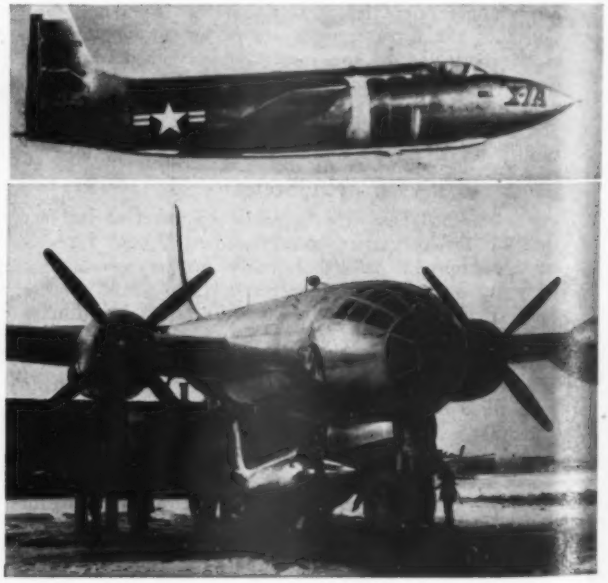

Rocket-powered Bell X-1A is shown at left during its maiden flight over Edwards AFB, piloted by Jean L. (Skip) Ziegler, chief of flight research for Bell. At right, a new method of attaching the experimental research aircraft to its mother ship is demonstrated. Hydraulic hoists raise the B-29 and the Bell X-1A is moved underneath to be attached to the fuselage.

points an agent to receive the existing 5% on sale of passenger travel over lines of the appointing member or members.

• **Tour-basing fares** will be filed for use by domestic agents.

• **Annual agency fee** will be eliminated. To be an ATC agent has cost $20 annually per location, and $10 for each branch office, with a maximum of $300 per agency.

It is believed that one of the reasons behind the plan was a desire on the part of larger airlines to cut down on agents' "interception" of commercial business—business which the carriers claim should be handled by them directly. ATC said the purpose was to increase the incentive on tours while at the same time providing "adequate compensation to the . . . agents for the service function of issuing tickets."

Under the new rules, an agent selling a $45.10 one-way New York-Chicago ticket will receive $1.50 commission, whereas at five per cent he received $2.25. On a $300 round-trip he will get $3.00, compared with $15. On a $20 one-way, he will continue to receive five per cent, or $1.00.

Airlines will file special reduced fares for use by agents and others who qualify as tour operators for the purpose of pricing domestic air travel as a part of an "advertised air tour." These tour-basing fares will not be available to the public except as part of such a tour. The tour operator will pay to agents retailing the tours a commission of 10% of the tour-basing fare plus one-fourth of the amount by which the tour-basing discount exceeds 10%.

Little Incentive

At present a wholesaler of tours has little incentive. He is entitled to 10% of the standard air fare, but passes this along to the retailers, hoping to make his money from the ground portion of the tour.

Here's how airline officials say the new plan would work: on a standard fare of $100, the tour-basing tariff for agents might be $75. The tour operator pays the retailer 10% of the latter, or $7.50. The tour-basing discount ($25) exceeds this 10% by $17.50, and the retailer also gets one-fourth of this, or $4.37. Thus, his total payment is $7.50 plus $4.37, or $11.87. The wholesaler keeps the difference between $11.87 and $25, or $13.13.

The present 10% commission on domestic tours will be continued, even though a tour-basing fare may not be involved. Also, carriers will continue to pay the international rate of commission on the domestic portion of international travel. • • •

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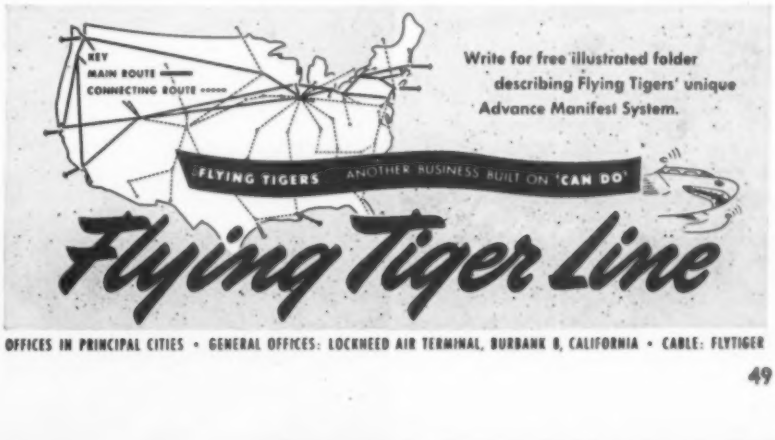
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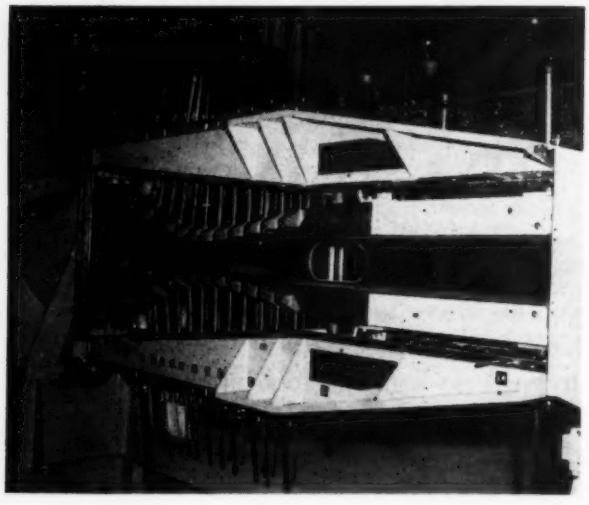
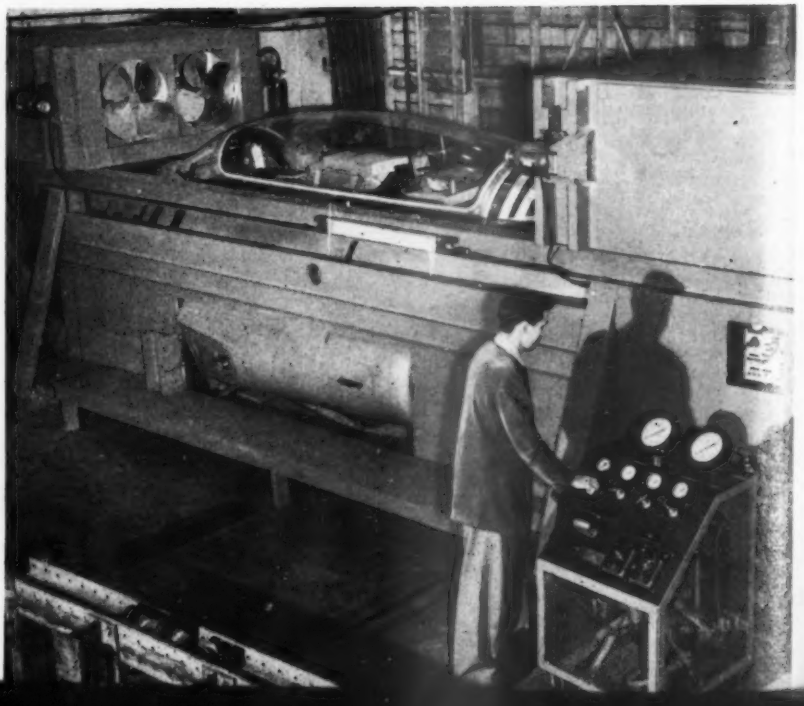
Bombardier trainer fuselage of the Convair T-29D, first built for the USAF, nears completion in San Diego. Visible at left is fuselage of a T-29B, a navigator trainer with astrodomes on top. Seven students and instructors will be carried in the "D."



Production Lines

Wind tunnel, shown above with one side removed, produces airspeeds up to 3500 mph at the USAF's Arnold Engineering Development Center, Tullahoma, Tenn. Air enters from left, exits at right; models are placed in front of viewing window at center.



Its cold outside as fans circulate air at 65° below zero Fahrenheit over a new shatter-resistant canopy for fighter planes. The new canopy was developed under the sponsorship of the Air Force's Air Research and Development Command; it is shown under test at Lockheed's Burbank plant. Temperature inside is kept at 40° above zero.

West Coast Talk

By Fred S. Hunter

FIRST of the Air Force's highly anticipated "one hundred" series of supersonic fighters is in final process of being hatched. It's North American Aviation's onetime "Sabre 45," now the F-100A. Assembly of the prototype has been completed. The ship recently was turned over to engineering flight, which is now preparing it for its first trip aloft. It should fly in July.

•

Convair's already widely heralded F-102 delta will come out of the incubator not too far behind. Schedule calls for initial flight in October. It may be a little late, however, what with the Air Force's real estate problems at Convair's San Diego Plant No. 2, and one thing and another.

•

A new era will be ushered in for the Air Force by the 100 series. These are operational airplanes designed to push through Mach one in pursuing regular military tactics, as contrasted with the purely research-type craft which have been used to lead the way to supersonic speeds. Other 100's projected by the Air Force include McDonnell's F-101, Republic's F-103 and Lockheed's F-104.

•

SUCCESSOR TO F-86 LINE

It's inevitable that performance rivalries will crop up between the F-100 and the F-102, even though they are different purpose airplanes. The North American entry is a fighter-bomber. Convair's is an all-weather interceptor. But North American is not the kind of a company to stand still on a design. Witness the variations in the F-86. If the Air Force doesn't eventually buy an interceptor version of the F-100 it won't be for any lack of effort on the part of Dutch Kindelberger, Lee Atwood, and Ray Rice. The end of the F-86 line is still quite a way down the road, nonetheless they can't help but be pointing toward an F-100 line to take over as the F-86 diminishes.

•

With a possible interceptor version of the F-100, North American might become a direct competitor of Hughes Aircraft as well as Convair, because North American has its own automatic fire control development. It will be recalled that Hughes won the competition for the advanced fire control system which will be used in the F-102 to fire the Hughes-built F-98 Falcon air-to-air guided missiles.

•

Irrespective of future developments, however, the F-100 and and the F-102 will attract comparison because of their design configurations. North American's increase from 35° to 45° of sweep also enables it to make use of a thinner wing. Convair is an implacable advocate of the delta wing for high speed and high altitude performance.

WEST COAST MISCELLANY

June 1 is the date for the start of CAA **flight tests on the DC-7** . . . **William J. Saiger,** totally blind, is a research analyst in Ryan Aeronautical's engineering laboratory. He had experience in radio and electronics in the Army and Ryan employed him as an experiment to determine if a blind person could adjust himself to full-time duties in an aircraft plant . . . **First power package** ever worked on by Fred Rohr, who now makes more of them than anybody else in the world, was the unit in Lindbergh's **"Spirit of St. Louis."** . . . Evidence that Hydro-Aire foresees good potentials in the **air turbine field** is the fact that it now has 43 engineers in this section alone . . . **Carl Christensen,** UAL's flight safety director, says that beyond 1960 **every flight will be on instrument.**

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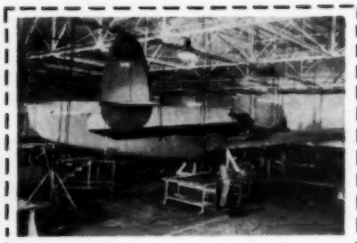

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Extra Section

By William D. Perreault

FLYING from Paris to Casablanca on one of the de Havilland Comets operated by Union Aeromaritime de Transport one gets the impression of tremendous technical advances. Madrid from 35,000 feet is a sight of great beauty. But in the cockpit Captain Tony Veillard and First Officer Jacques Davies struggle with an age-old problem—cold feet. They turn off heat to one section of windshield to get more heat to this critical area. Somehow the designers are still short of know-how on providing comfort-level temperatures at the rudder pedals.

•

Captain Veillard tells us they occasionally run into jet streams on this route. The fastest one to date has been 150 knots. They can recognize the entry period by rapid changes in outside air temperature and by slight turbulence. Usually there are periods of weeks in which no jet stream is encountered—then they'll run into one several days running at approximately the same point.

•

An interesting aspect of UAT's Comet operation: they are depreciating their Comets on a basis of 6,000 flight-hours rather than a fixed calendar period. They expect to fly 2,000 hours per plane in the first year and about 2,500 hours per year after that. UAT is anxious to cover depreciation of the Comet I fleet as soon as possible because they hold options on Comet II's and III's, which they feel will obsolete these earlier models in a short period.

•

European airline operators are pro-British in the matter of basic policy regarding turbine engine overhaul costs. De Havilland assures the potential users of their jets what overhaul costs will be and signs contracts for overhaul on a cost-per-flying-hour basis. New contracts for the de Havilland Ghost engines in the Comet I's call for 600-hour overhaul periods and a guarantee of $10 per flight hour total cost, parts and labor.

•

A fellow passenger on a tourist-service flight told us of the demand for more toilets created by high density seating. He had been a passenger on a high density Super Constellation which encountered rough weather en route. Passengers were ordered to have seat belts on for an hour or more. When the passengers were finally permitted to get up there was virtually fighting in the aisles over reading room priorities.

•

Sometimes we fail to appreciate the problems of international airlines operating into airports where non-skilled help used for ramp functions is somewhat primitive. Take KLM, for example. They are forced to use stickers which show palm trees instead of arrows to indicate which end of a package should be kept "this end up." Natives recognize the palm tree arrangement where words or an arrow would be useless. KLM also uses an elephant drawing and a woman in native costume to tell natives at a glance the direction (eastbound or westbound) of package shipments.

•

Schiphol Airport in Amsterdam is probably the only municipal airport in the world located below sea level. Built on what was once (50 years ago) Haarlem Lake, Schiphol is 13 feet below sea level. The name signifies the role once played by Haarlem Lake as a holding place for sea vessels during storms. It is from this region that Dutch-founded Harlem, N. Y., got its name.

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If you are interested in aviation . . . if you want to help keep America first in the air, you should join the NATIONAL AERONAUTIC ASSOCIATION

With your membership in NAA, you join—with other prominent aviation leaders—in affiliating with the oldest national aviation group in America . . . a non-profit, non-partisan organization formed in 1905 to inspire and foster development of aviation in the U.S.A.

NAA serves its many Chapters, other groups, and individuals at the local level. Nationally, it welds "grass roots" aviation's common interests together in many ways. It advances every phase of aviation by public education. It is custodian of the famous Collier and other trophies. And, it is official representative in the United States of the Federation Aeronautique Internationale.

Your support is needed to help NAA carry on its extensive program which promises to be of even greater public service in the important years ahead. What better time than NOW—in this 50th Anniversary Year of Powered Flight—to become an "NAA Citizen in Aviation, U.S.A."

HERE ARE SOME OF THE THINGS YOU RECEIVE —OR ENJOY— AS A MEMBER OF NAA:

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- NAA wing decals for windshields.
- Monthly issues of National Aeronautics, NAA special bulletins, and various publications of Organization Affiliates and Industry Members.
- NAA Hertz Auto Rental courtesy card; Avis Rent-A-Car Credit Card
- CAA records search service.
- NAA staff assistance in your aviation problems, licenses, legal matters, regulations, etc.
- Local club visiting privileges extended by NAA Chapters.
- Special services in Washington, D.C. tailored to particular needs.
- NAA conventions and flight round-ups.

YOU CAN SAVE MORE THAN YOUR NAA MEMBERSHIP COSTS

- Travel and pilot accident insurance . . . protection as low as $1 per $1,000 coverage.
- Special reduced subscription rates on most aviation magazines.

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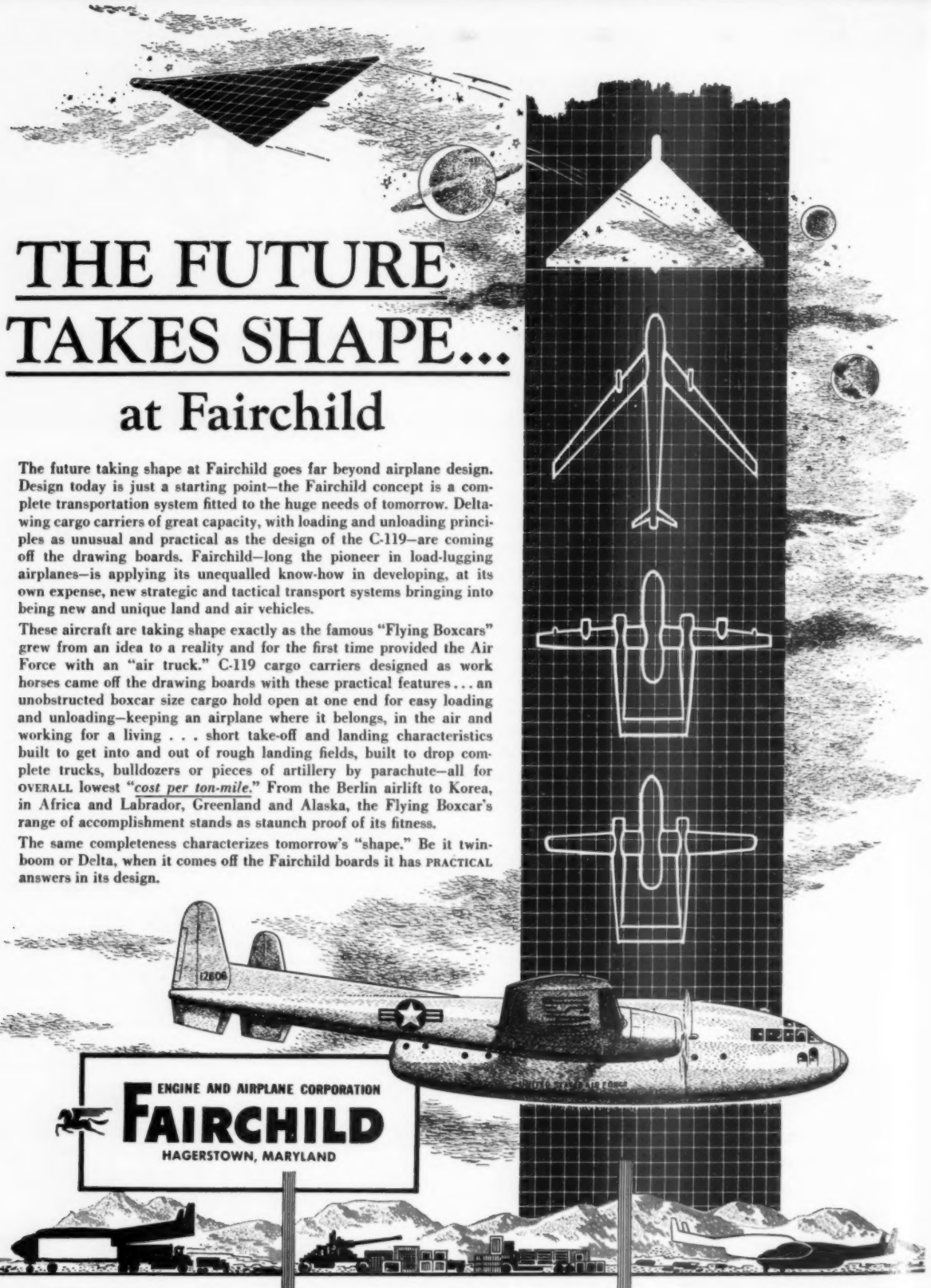
Survey Reveals

CONVAIRS



THE FUTURE TAKES SHAPE...

at Fairchild

The future taking shape at Fairchild goes far beyond airplane design. Design today is just a starting point—the Fairchild concept is a complete transportation system fitted to the huge needs of tomorrow. Delta-wing cargo carriers of great capacity, with loading and unloading principles as unusual and practical as the design of the C-119—are coming off the drawing boards. Fairchild—long the pioneer in load-lugging airplanes—is applying its unequalled know-how in developing, at its own expense, new strategic and tactical transport systems bringing into being new and unique land and air vehicles.

These aircraft are taking shape exactly as the famous "Flying Boxcars" grew from an idea to a reality and for the first time provided the Air Force with an "air truck." C-119 cargo carriers designed as work horses came off the drawing boards with these practical features... an unobstructed boxcar size cargo hold open at one end for easy loading and unloading—keeping an airplane where it belongs, in the air and working for a living . . . short take-off and landing characteristics built to get into and out of rough landing fields, built to drop complete trucks, bulldozers or pieces of artillery by parachute—all for OVERALL lowest "*cost per ton-mile*." From the Berlin airlift to Korea, in Africa and Labrador, Greenland and Alaska, the Flying Boxcar's range of accomplishment stands as staunch proof of its fitness.

The same completeness characterizes tomorrow's "shape." Be it twin-boom or Delta, when it comes off the Fairchild boards it has PRACTICAL answers in its design.

ENGINE AND AIRPLANE CORPORATION

FAIRCHILD

HAGERSTOWN, MARYLAND

EASE OF LOADING — typical of the combat-proven C-119, is basic in the design features of tomorrow's practical and daring Fairchild shapes to come.

ANY TYPE OF MILITARY LOAD will be carried in future Fairchild "shapes"—a feature incorporated as a *must* for future military flexibility.

MINIMUM TURN-AROUND TIME is basic engineering in all "shapes to come" so that mission of the future will have the lowest "*cost per ton-mile*."

Survey Reveals Aircraft Orders

A total of 348 transports, including eight helicopters, are on firm order by domestic and foreign air carriers, an AMERICAN AVIATION survey has revealed. The planes, to be delivered by the third quarter of 1955, include 192 for U.S. airlines and 156 for foreign lines:

Aircraft	Foreign Orders		U. S. Orders	
Sikorsky S-55	SABENA	3	NYA	4
			LAA	1
Douglas DC-7			AA	25
			United	25
			Delta	4
			National	4
Douglas DC-6A	SABENA	2	American	3
	CPAL	2	Pan Amer.	3
	KLM	2	Tigers	5
	Aigle Azur	2		
Douglas DC-6B	CMA	2	Pan Amer.	25
	SAS	6	United	2
	Swissair	1	Panagra	2
	SABENA	4	Western	4
	Alitalia	4	North Amer.	2
	Japan AL	4		
	CPAL	3		
	TAI	3		
	LAN	3		
	LAI	3		
Lockheed L-1049B			Seaboard & Western	5
Lockheed L-1049C and E	TCA	8	Eastern	22
	Varig	3	North-west	6
	LAV	2		
	Avianca	3		
	Qantas	8		
	Iberia	3		
	Air India	2		
	Braathens SAFE	2		
	Pakistan Air	3		
	Air France	10		
	KLM	13		
Convair 340	KLM	12	United	24
	Garuda	8	Braniff	2
	CMA	8	Chicago & South-ern	10
	Aeronaves	4	National	14
	PAL	5		
	Aero O/Y	2		
	Cruizero do Sul	4		
	Jugoslov.	3		
	Alitalia	2		
	Real	4		
	Avensa	3		

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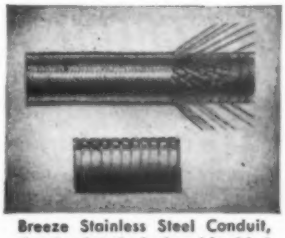
IN NEW CONVAIRS, TOO

Power plant section of Convair 340, one of several Convair types that use Breeze Conduit.

BREEZE MARK Conduit and Fittings



Breeze Stainless Steel Conduit, showing interlocked and braided construction.

Like so many types and makes of military and commercial aircraft, latest CONVAIRS rely on BREEZE Conduit and Fittings, particularly in the *power plant sections*. In such applications high heat resistance is a critical safety requirement, and BREEZE heat-resistant, stainless steel conduit meets the most exacting specifications in this respect. BREEZE 198 Series Conduit is FIREPROOF – withstands temperatures up to 2000° F. for 5 minutes in accordance with CAA safety regulations, Release No. 259. Breeze Conduit and Fittings for ignition circuits or high tension applications is a production item, readily available in a wide range of sizes. Flexible conduit assemblies are made to specifications for any use.

BREEZE Flexible Metal Conduit

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The Travel Card that gave "CREDIT" to the public

In 1934, when American Airlines issued the first credit card, proposed by C. R. Speers, an American sales manager, there was an immediate expansion of passenger traffic in the first class air travel field.

Up to then, all tickets had to be purchased by cash. This was a decided disadvantage to businessmen who found it necessary to carry large sums of money with them when they flew from one destination to another on an extended business trip. Credit cards developed customers for the airlines from firms who had not previously encouraged their personnel to fly on company business. Airline credit cards have become so popular and are now so widely used that they are accepted as evidence of credit at leading hotels and drive-your-self automobile agencies throughout the entire country.

The first issuance of credit cards is only one of many milestones in the history of air transportation introduced by American Airlines.

AMERICAN AIRLINES INC.
America's Leading Airline

NO. 2 IN A SERIES OF ADS SHOWING THE PROGRESS OF AIR TRANSPORTATION

Maintenance Bulletin Board

WEIGHT SAVING on a DC-4 tail section.

Reducing Program For Northwest Fleet

Northwest Airlines has started a fleetwide weight reduction campaign in which every pound of excess weight on its Douglas DC-4 and Boeing 377 airplanes is getting a thorough and critical review. Where the economics of a change will permit, and the efficiency of the operation does not suffer, a project is started to eliminate the unnecessary poundage.

Excess weight in an airplane is just money lost. Northwest figures the dollar value of one pound removed at $20 per year per plane in domestic service and $50 in overseas operation. During a recent DC-4 overhaul, the company hit a new high for the program—cutting almost 1500 pounds from one airplane.

The NWA project is wide in its scope, with no individual system or area of the airplane overlooked. One major change calls for use of sandwich material instead of plywood for inside plane construction; metal, wood, or a combination of both give a high strength surface on each side with a low density core, and in many locations result in a lighter installation than plywood.

Another modification removes 44 pounds from the tailcone structure of each DC-4. In this project .040 to .064 aluminum is being replaced by .020 aluminum, and half of the stringers and two of the tailcone frames are being eliminated. Many other components in the tailcone area are being replaced with lighter items.

Other changes on the DC-4 are paying dividends; brass oil coolers are giving way to aluminum as replacements are needed at a gain of 120 pounds per airplane; in one instance the removal of a plywood flooring and change in seat model brought a 760 pound saving.

Still in the thinking stage is a plan to convert from the present multiple-disc brakes to the Goodyear single-disc type. This would bring a net weight saving of 200 pounds per plane, but the high cost of the change calls for further study.

On the Boeing 377, the drinking water tank over the men's lavatory is coming out, along with another waste tank and a water fountain. The actual water requirements have proved to be much lower than the tank capacity; the water fountain was seldom used. Another B-377 item eliminates the radio operators' station—improved communications facilities no longer call for a radio operator in the crew complement.

Switch to Rivets Saves Magneto Ventilators

A small rivet used instead of safety wire to retain the stacked shells in Northwest Airlines DC-4 magneto ventilators is paying dividends—in 1952 alone the idea netted NWA a savings of more than $2,000 and cut its ventilator replacement rate at each engine overhaul from 75% to less than 1%.

In the past the vents used in Northwest's Pratt & Whitney R-2000 engines had a very limited life. The safety wire used to retain the ventilator shells could not be installed entirely taut. In service, normal engine vibration and slipstream

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"IMPOSSIBLE" ICECAP RESCUE

ON THE SEVENTH day, the plane overhead radioed, "We'll try to take your injured men off tomorrow."

But to the twelve men huddling against a temperature of 20° below inside their wrecked Royal Air Force transport plane, there was little hope. They had crashed where the Greenland icecap was 8000 feet above sea level. No skiplane, they thought, could take off from that altitude.

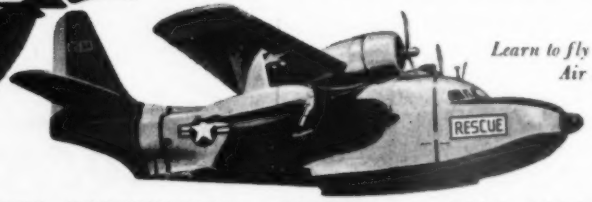
The next day, the wind plagued them with a mirage of engine sounds. Finally a hum grew, and an angel speck became a twin-engine—

"An amphibian? To land here?"

She did, then even taxied over the snow to the wreckage to load the stretcher cases. An hour of agony followed. Finally the JATO bottles were mounted to her hull, and she made the "impossible" take-off. Within two days, all were rescued.

Grumman salutes the USAF Air Rescue Services crew of that Grumman SA-16. Especially proud are the engineers who wedded a retractable ski to the amphibian keel, who created the Grumman Albatross *Triphibian* and made it possible to help save men on snow and ice, as well as sea and land.

Grumman



Learn to fly with the U. S. Navy, Air Force, Marine Corps, or Coast Guard.

GRUMMAN AIRCRAFT ENGINEERING CORPORATION • BETHPAGE • LONG ISLAND • NEW YORK

action caused the wire to groove the vents and to enlarge the wire hole, requiring that some 75% be replaced at overhaul.

Then the rivet idea came to Northwest, originating with S. A. Larson,

UNLIMITED LIFE of magneto vents is seen by Northwest Airlines with use of rivet (right) to retain ventilator shells. Vent at left was damaged by safety wire formerly used, which brought 75% rejection at overhaul.

master mechanic at its St. Paul overhaul bases, and bringing him a $200 award from the company suggestion plan. With its use, the wire chaffing and wear are gone and Northwest now sees no end to the life of magneto ventilators.

Matting Saves Wings

A corded rubber matting known as Traffic-Tred is used by Canadian Pacific Airlines to provide a slip-proof footing on wings as well as to protect the wing surface from being marred and scratched when airplanes are being serviced.

A new type perforated-corrugated, corded rubber mat, Traffic-Tred is manufactured by the American Mat Corporation of Toledo, Ohio. The matting is 7/16" thick and is available in rolls 24", 36", and 48" wide.

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All these are available as single or dual units. We manufacture a complete line of ground navigational aids. Write for literature.

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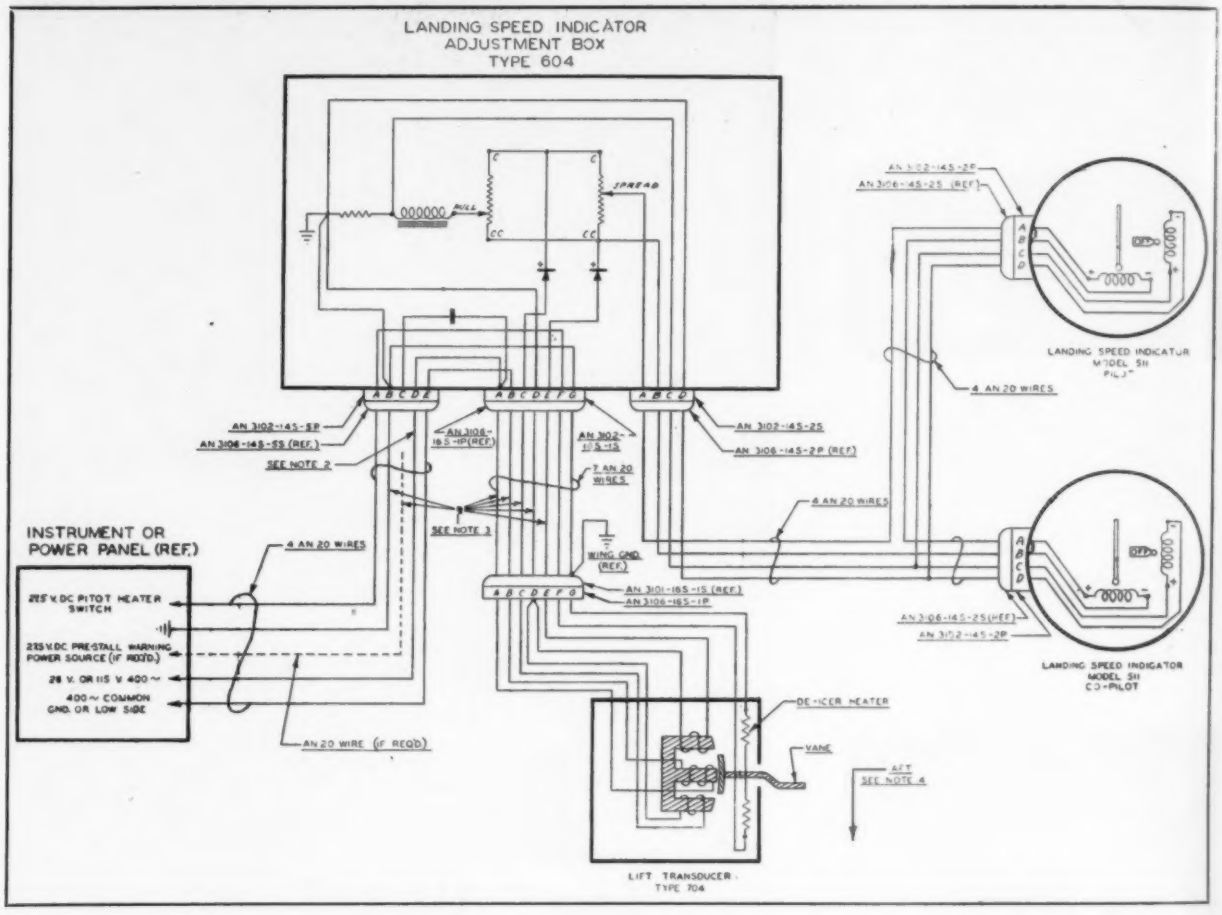


New Unit Shows Take-off, Landing Speed

THE Safe Flight Instrument Corp. has relegated the airspeed indicator to a subordinate role during take-off, climb, and landing with the development of its new Landing Speed Indicator. During a recent flight demonstration in a twin Beech D-18S at Washington National Airport, the instrument proved that a safe approach speed can be established without the necessity of the pilot making the usual calculations of landing speed, which is affected by load, acceleration, flap position, and gust factors.

All the pilot has to do with the LSI is keep the pointer of the standard-size instrument centered. If landing, take-off, or climb is either too fast or too slow, the pointer tells him so. The plane is operating at proper speed as long as the pointer is centered.

The panel unit has a single indicating pointer which moves through an arc of 75°, marked by segments colored red, white, and green. The sensing unit is mounted below the leading edge of the wing. The instrument automatically calculates the factors of gross weight, flap setting, and landing gear position. The indicator is not affected by rough air and does not oscillate, immediately indicating any change in longitudinal control.

INDICATOR shows pilot whether or not he has attained proper speed for take-off, climb, or landing.

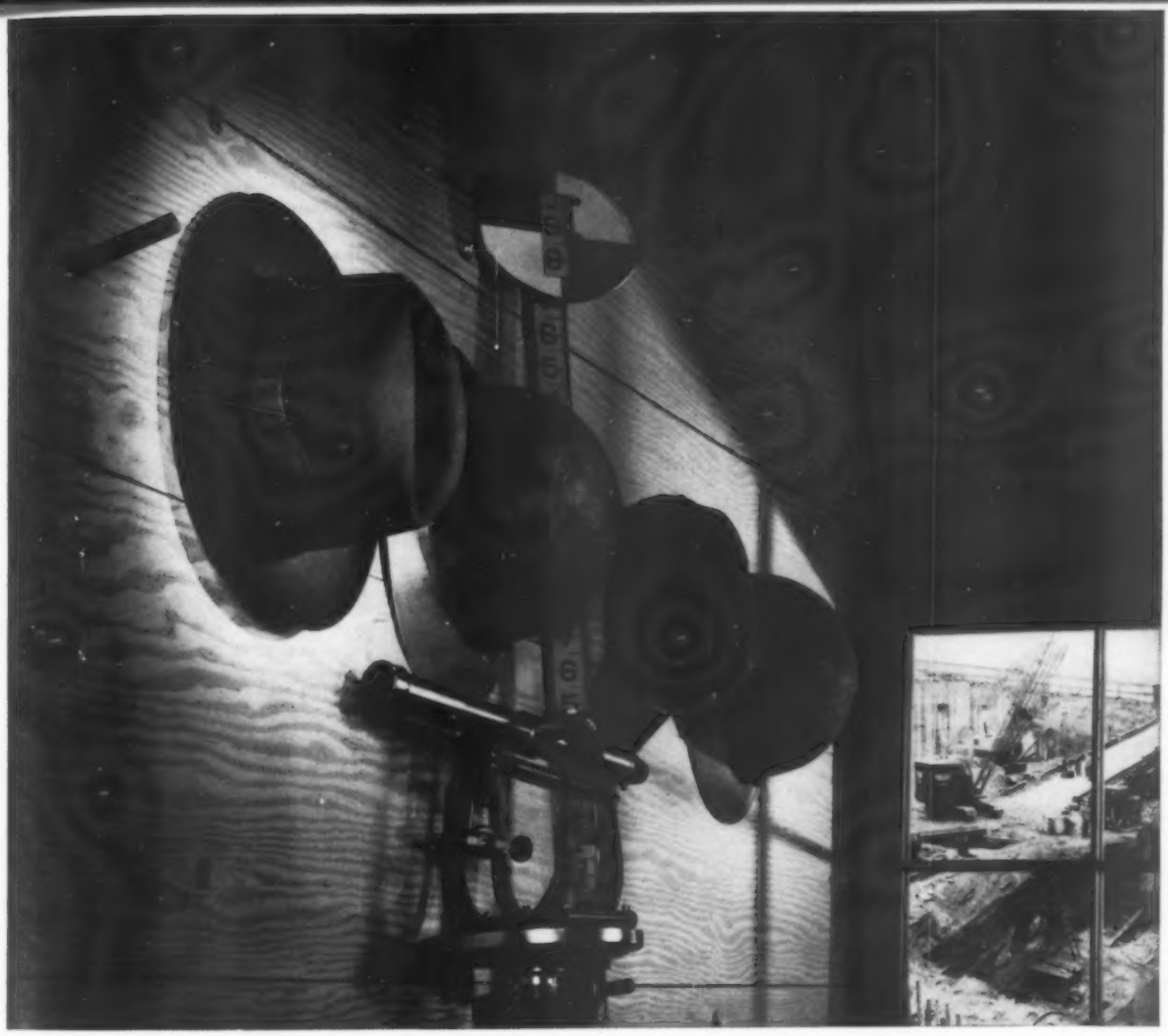
The control of the LSI is a transducer with a small vane protruding out and down below the wing's leading edge.

The red segment of the instrument indicates that airborne speed has not been reached for take-off or that approach is too slow for landing; the green shows excessive speeds.

In case of one-engine failure immediately on take-off, it is claimed that LSI will indicate proper speed to the pilot regardless of weight and allow the plane to remain stable.

Safe Flight's development comes on the heels of a recent report of an analysis of a CAA survey which found that one in 20 pilots are at least 20 mph too fast on the last leg of final approach and one in seven were found to be at least 10 mph too fast. The LSI, from results of the flight demonstration, could very well be the cure.

Safe Flight's base is in White Plains and the instrument will be marketed for under $500. Weight is about three pounds. • • •



How to hang your hat here more often

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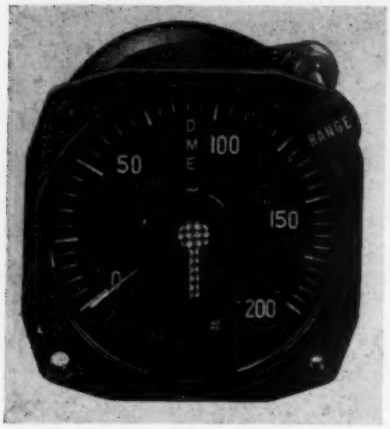
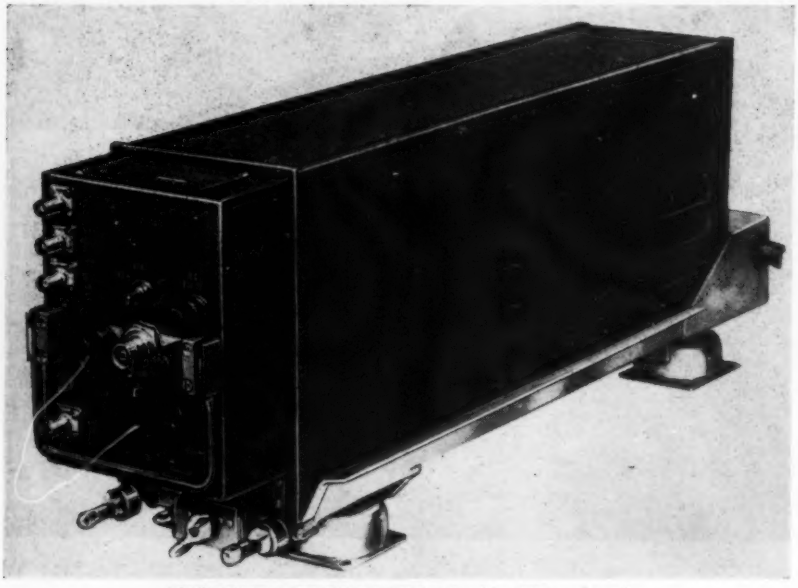


INDICATOR has 0-40 and 0-200 mile scale.

ANTENNA is less than five inches high.



AIRBORNE INTERROGATOR fits ½ ATR rack and handles up to three remotely located indicators.

Bendix to Market Hazeltine's DME

Deliveries begin in August on 20 units already sold; Bendix to participate in engineering.

FOR THE FIRST TIME in its long history in the aviation electronics field, Bendix Radio Division of Bendix Aviation Corporation has set out to market another manufacturer's equipment. The second party in the Bendix move is Hazeltine Electronics Corp. and the product is Distance Measuring Equipment (DME), latest addition to the "Common System" of air navigation facilities.

Under a contract signed by the two companies late in January, Bendix Radio has become the sole domestic outlet for the Hazeltine-designed airborne equipment. Although initial production will be handled by Hazeltine, a clause in the contract allows for Bendix manufacture, should the demand require it.

Bendix is taking its new role of marketer for the Hazeltine equipment seriously. With the impetus of its own established sales organization and a network of more than 150 distributors throughout the U.S. behind the device, now called the Bendix NA-5 Distance Measuring Equipment system, some twenty sales have already been recorded, with deliveries to begin in August, 1953.

These recent events point to an expanding program:

• **First public demonstration** of the system at the Institute of Radio Engineers meeting in New York brought strong response from industry.

• **Flight demonstration** by Pan American World Airways last month points up airline interest. Bendix expects other airline tests to follow.

• **Nationwide demonstration** and sales program will get under way soon. The Radio Division is installing the system in its Twin Beech, which, along with an Eclipse-Pioneer Douglas DC-3, will tour every major airline and executive airplane center in the U.S.

But the participation in the new partnership by Bendix is not purely a sales activity. From here on out its engineering and service organizations will collaborate with Hazeltine in design, development, or corrective engineering problems that arise. Carrying this participation to another division of the corporation, Eclipse-Pioneer is already well under way on the design of a counter type indicator, which will be offered as an alternative to the voltmeter type originally provided by Hazeltine.

Corporate Fleet Goal

First goal in getting DME started will be the corporation aircraft fleet. Here Bendix feels the equipment has great potential as a time and money saver. The nature of the business use of these aircraft often dictates that they fly off the airways to airports not served by the scheduled airlines. But the navigational facilities available in the past would not permit this operation in instrument weather, forcing them to fly many extra miles and consume considerably more fuel on circuitous routes over the airways.

Next big outlet to be pursued is that represented by the scheduled airlines. Here Bendix sees the market developing at a slower pace than that of the corporation aircraft for several reasons.

The first, a lack of interest due to non-availability of airborne equipment on a production basis, no longer exists; another, the absence of installed ground facilities, will be out of the way by the year's end. CAA will have completed more than 400 ground (transponder) stations at VOR sites throughout the country by December, 1953, according to the present schedule.

But Bendix sees airline interest increasing with the recognition of the many potentials that DME has to offer, more accurate arrival estimates (ETA's) and simplified flight operations during instrument weather in high density traffic control areas. Operational tests being conducted by Mohawk Airlines under contract with the Air Navigation Development Board are also looked upon as a source of increased airline interest in DME.

On the other side of the ledger, principal drawbacks to wide scale airline acceptance are viewed by Bendix as the indecision of the military on DME, a situation that implies that the equipment may have an all too short life and one that would not bring a reasonable return on the large investment the airlines would make in buying it. In the military, the USAF has shown some interest, but retains the "have-to-be-shown" attitude. The Navy Bureau of Aeronautics is said to be more interested in a system of its own.

A Must for Jets

For jet transport operations the use of distance measuring equipment is pretty much accepted as a must. Here descents from the more economic high-altitude cruise condition must be made at the most economical time, to combat the high fuel consumption of low-level flying, and accurate distance measuring equipment is the answer.

The NA-5 system which Bendix is offering is made up of a model MN-101 interrogator, an MN-102 antenna, and an MN-103 indicator, with the complete system weighing about 31¼ pounds. It differs from the Hazeltine model 1810 equipment being used in the Mohawk Airlines test program in that the latter uses a single range indicator mounted integrally in the interrogator housing, and is not easily adapted to cockpit mounting.

The range of the NA-5 system is 200 nautical miles, with a range selection on the indicator which provides dual range readings of 0-40, or 0-200 nautical miles, either of which can be selected by the turn of a knob. The accuracy of the equipment is within 0.5 nautical miles or 0.3% of the distance, whichever is the greater.

Operation of the Bendix DME is in the 960-987.5 mc range for the interrogation frequency and 1187.25—1215 mc for the reply frequency. Interrogator power requirements are 250 watts at 27 volts d-c, 25 watts at 115 volts 400 cycle a-c and 100 watts at 115 volts 380-1000 cycle a-c.

In operation, DME gives the pilot a direct reading in miles of the slant distance between the airplane and the DME ground facility to which he is tuned. The airborne interrogator transmits a series of radio frequency pulses which are received by the ground station or transponder; the ground receiver automatically activates a transmitter which returns the signal to the airborne where it is received, measured by electronic means in terms of the elapsed time from transmission to return and then translated into a reading in miles on the range indicator. • • •

Great Airlines
from Little Airlines grow

and become GREAT assets to the commercial and military might of our Nation!

EASTERN AIR LINES, INC. of New York City is one of the finest examples of such dynamic development. For Eastern began back in 1928 when their first parent company was formed, backed only by private capital and the stern determination to render a vital new service to the Nation and its citizenry.

It was then that Harold F. Pitcairn, an aircraft manufacturer, successfully bid to carry the mail from New Brunswick, New Jersey, to Atlanta. Pitcairn Aviation Company began this service the following year with 5 Pitcairn PA-5 Mailwings, and by 1930 when the name was changed to Eastern Air Transport, the company was operating 6 Curtiss Condors, 14 Kingbirds, a Ford tri-motor and 2 Fokker tri-motors. In 1931 New York Airways was added; in 1933 Ludington Airlines; and in 1936 Wedell-Williams Transport Corporation. In 1938 famous Captain Eddie Rickenbacker and his associates bought Eastern Air Transport and formed Eastern Air Lines, Inc., operating a modernized fleet including: 2 Stinson Reliants, 10 Douglas DC-2's and 10 Douglas DC-3's. During that year Eastern carried an unprecedented 162,246 revenue passengers and rolled up the then impressive record of more than 8 million revenue miles.

Today, fifty years after the famous Wright Brothers' first flight at Kitty Hawk, North Carolina, Eastern's Great Silver Fleet includes more than 34 Lockheed Constellations, 60 Martin Silver Falcons and 11 Douglas DC-4's. And route mileage has grown from an humble 1411 miles to the present 12,746 miles.

Thus on the golden anniversary of powered flight, NORTH AMERICAN AIRLINES, an independent carrier pioneering air coach in today's tempo, congratulates Eastern Air Lines and Captain Eddie Rickenbacker and his associates, for its contribution to the development and growth of the Nation's air transport industry under the American free enterprise system.

(Second in a series — FOLLOWING THE TRAIL OF THE PIONEERS)

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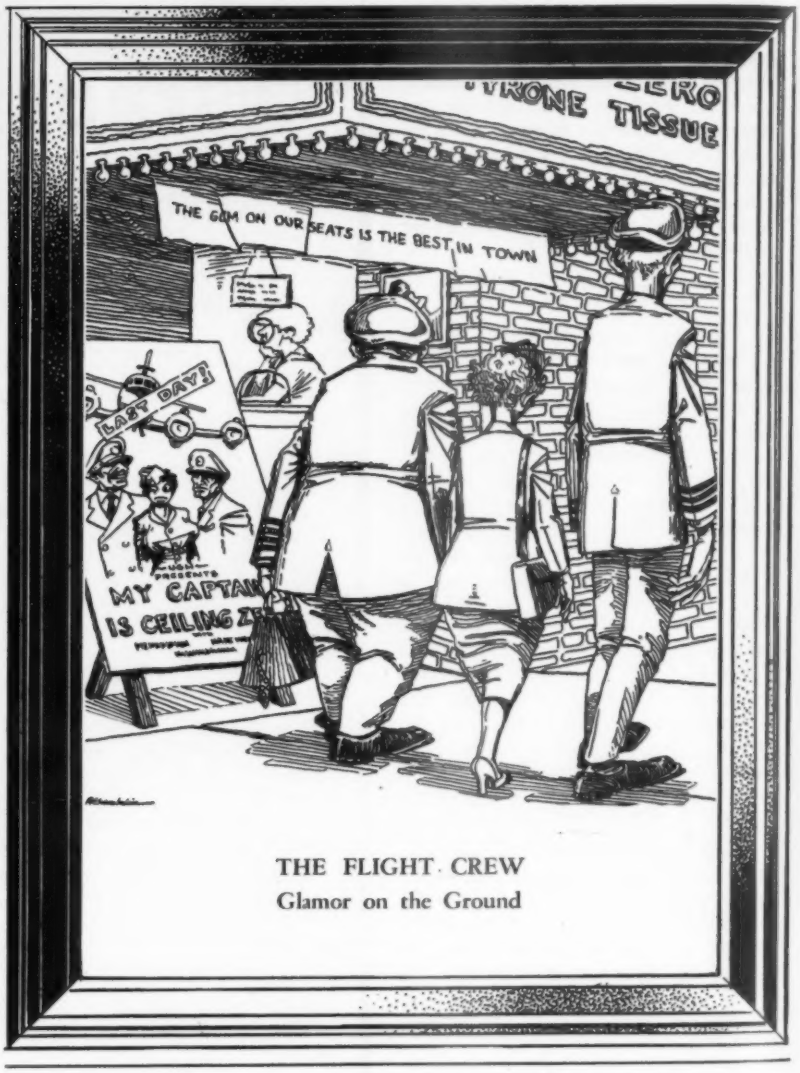
Ready for Hanging

One of a series of selected portraits of some very select members of the airline family, as seen by Richard E. Chamberlain.



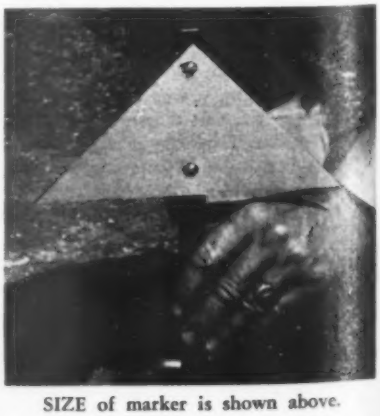
THE FLIGHT CREW
Glamor on the Ground

Colored Markers Identify Taxiways

A new taxiway identification system, employing colored markers instead of sometimes confusing numbers and letters, is now in operation at the Tucson (Ariz.) Municipal Airport.

The system, devised by F. M. ("Mike") McLean, superintendent of maintenance for the airport authority, uses a triangular, flat-surfaced marker with light-reflecting material (Scotchliet) in various colors on each side of the flat surfaces of the triangle. The units are reportedly simple to make and easy to install.

The triangles are 22-28 G scrap aluminum and steel; the vertical column is ¾" lather's channel iron attached to the triangle by 3/16" stove bolts. The unit cost varies with the production, but three hundred units can be made and installed for $204, or 68c per marker.



SIZE of marker is shown above.

Backing up everything we make...
AiRESEARCH WORLD-WIDE SERVICE

Today, AiResearch is producing more than 750 individual aircraft accessories! These precision products, which are combined into complete systems or utilized as individual units, are on almost every U. S. commercial and military plane. Our Customer Service organization of 242 people operates to back up our products *anywhere in the world!*

What AiResearch service provides:

- A staff of thirty-six technicians who are permanently located with the armed forces and with airline and airframe companies throughout the world.
- Eight roving trouble-shooter specialists in the field at home and abroad.
- A "Headquarters" engineering group for immediate advice and action on customer problems.
- Product training of customer personnel at AiResearch (25,000 hours annually) or at the customer's location.
- Accredited overhaul and service agencies throughout the United States, the British Isles and Europe.

AiResearch Manufacturing Company

A DIVISION OF THE GARRETT CORPORATION

LOS ANGELES 45, CALIFORNIA • PHOENIX, ARIZONA

DESIGNER AND MANUFACTURER OF AIRCRAFT EQUIPMENT IN THESE MAJOR CATEGORIES

Air Turbine Refrigeration | Heat Transfer Equipment | Electric Actuators | Gas Turbines | Cabin Superchargers | Pneumatic Power Units | Electronic Controls | Cabin Pressure Controls | Temperature Controls

IT'S AEROPROPS - FOR TURBOPROPS!

Convair XP5Y Flying Boat

Douglas A3D Skyshark

North American XA2J Savage

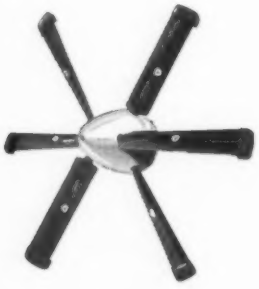
Allison Turboliner

Powerful Allison Team Used in all Four U. S. Turbine-Propeller Planes

Turbine-driven propellers solve many urgent needs for truly high performing aircraft. They provide the answer to the desired combination of heavy payload, higher speed and longer range. Yet turbine engines, plus propellers, permit take-off and landing from shorter runways.

Out in front and pioneering to prove the place of turboprops in today's *and tomorrow's* aviation spectrum are three U.S. Navy aircraft powered with six-bladed contra-rotation Aeroprops and Allison T40 twin turboprop engines.

Serving with all three is America's only commercial-type turbine transport—the Allison Turboliner. Equipped with Aeroprop four-bladed propellers and Allison turboprop engines, it is General Motors' contribution to the proof-testing of turbines and propellers in a broad band of military and commercial aircraft applications.



GM GENERAL MOTORS

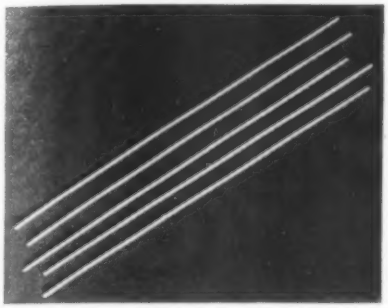
Building for today
Designing for tomorrow

AEROPRODUCTS GM

Aeroproducts

ALLISON DIVISION • GENERAL MOTORS CORPORATION
DAYTON, OHIO

New Products



Tubing

Uniform Tubes, Inc., has announced the availability of miniature and sub-miniature metal tubing with outside diameters as small as 1/100" and wall thicknesses down to 1/1000" for use in the manufacture of transistors and other electronic equipment.

Tubing shown is tinned copper, .020" O.D. with an inside diameter of .006". Manufacturing tolerances of the new tubing can be held as close as .00025", it is claimed, and it can be produced in metals of almost any desired analysis.

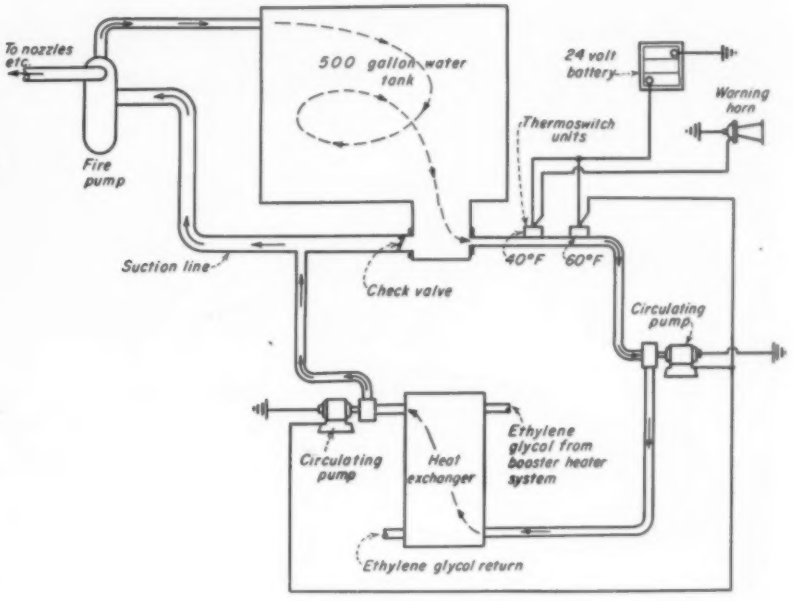
Address: **Uniform Tubes, Inc.,** 1220 Level Road, Collegeville 2, Pa.

Safety Label

A safety marker for containers holding hazardous materials, called the Brady QUIK LABEL has been made available by the W. H. Brady Co.

The new label sticks fast to glass, metal, wood, plastic, or ceramic containers without moistening, and is available on most common materials such as alcohol, carbontet, and gasoline. Preprinted warning instructions are included for materials generally used.

Address: **W. H. Brady Co.,** 727 West Glendale Ave., Milwaukee 12, Wis.



DOUBLE PROTECTION against freezing water supply in American-LaFrance-Foamite model O-10 crash fire truck designed for U. S. Air Force is provided in circulating system shown here. Thermostat switch (60°F.) in water line energizes water circulating pump which moves water from supply tank through heat exchanger and back to tank. Switch also activates second pump which supplies heated ethylene glycol to exchanger from 90,000 BTU heater system not shown. Thermoswitch (40°F.) in circulating line energizes warning horn when line temperature reaches switch setting, indicating system malfunction.

Crash Fire Truck System Warns of Freezing

The new Model O-10 crash fire truck developed for the U. S. Air Force by the American - LaFrance - Foamite Corporation uses an automatically actuated water circulation and heating system to protect its 500 gallon water supply from freezing in temperatures as low as — 65°F. A "freeze" warning system, also automatic, sounds the truck horn when a malfunction in the water system permits the temperature to drop to about 40°F.

Sensing elements in the circulating and warning system are provided by two Fenwall, Inc., Thermoswitch units, one set at 60°F. starts the circulation system in motion (see sketch) and another set at 40° protects against freezing damage as the result of malfunction of the circulation or heating system by automatically sounding the truck horn.

Designed for crash-fire use under world-wide, all-climate conditions, the Model O-10 truck is equipped with a 200 g.p.m. capacity turret which is directed either manually or by hydraulic power; three 35 g.p.m. ground sweep nozzles mounted near the front bumper; two under-truck nozzles fixed beneath the truck; and two 100-foot handlines for water or carbon dioxide. Extinguishing agents available on the unit include foam, fog-foam, water fog and straight water stream. High pressure CO_2 which was available on early production models is being replaced with chlorobromomethane. Gross weight is 26,700 pounds.

Address: **American-LaFrance-Foamite Corporation,** Elmira, N. Y.

Oil Drain

An oil drain unit for engine oil sumps or helicopter gear cases facilitates oil

GUNS... on the double!

Chase Assault Transports—the only planes capable of delivering heavy equipment to forward combat areas by ***landing*** in small, unprepared fields.

Gruelling Air Force-Army tests have proved this advanced engineering development which replaces—as the primary means of delivery—costly, uncertain techniques developed for interim use.

No time or weight penalty, no loss from chute malfunction or impact damage. Guns and vehicles are driven out of assault transports, intact, clean and ready for immediate service.

Chase AIRCRAFT CO., Inc.
WEST TRENTON, NEW JERSEY
STROUKOFF AVITRUC

draining operations without oil spillage, according to the Technical Development Company, the manufacturer. Unit consists of a self-closing magnetic drain assembly and a drain attachment.

In use, the magnetic plug is removable from the drain assembly without loss of oil. To drain the supply of oil from an engine or gear box, the swivel fitting on the end of the drain attachment is inserted in the drain assembly, the fitting automatically opening the drain valve.

Address: **Technical Development Company, 1228 Cherry Street, Philadelphia 7, Pa.**

Press

Burndy Engineering Company, Inc., of Norwalk, Conn., has introduced a new Pneudraulic Hypress for installing its Hydent wire connectors on aircraft electrical cable ranging from No. 8 through 4/0. The device, which provides 9,000 pounds indenting force with as little as 60 psi pressure on the air line, consists of a pneumatic hydraulic pump, a hydraulic cylinder and ram, and a frame for holding the cylinder and mounting the sliding racks.

Main feature of the new press is its working design which permits operator to feed cable from the side as well as from the front, thereby accommodating splices as well as terminal installations.

Address: **Burndy Engineering Company, Inc., Norwalk, Conn.**

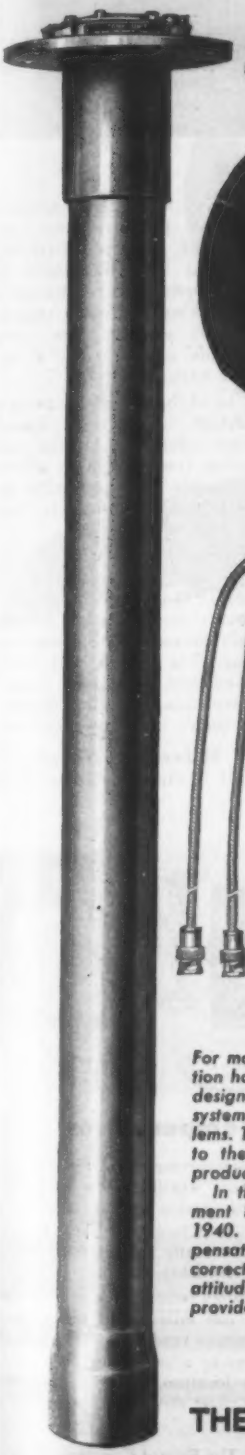
Safety Signs

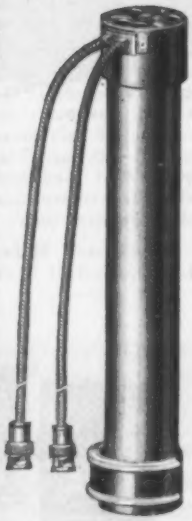
Industrial safety signs with a self-adhesive backing have been placed on the market by the Western Lithograph Company. Printed on a heavy fabric, over 200 standard signs are available in two sizes, 2¼" x 9" and 2¼" x 4½". Three color combinations include red letters on a white background for danger or fire protection; yellow letters on black for caution information; and black letters on white for informative or directional signs.

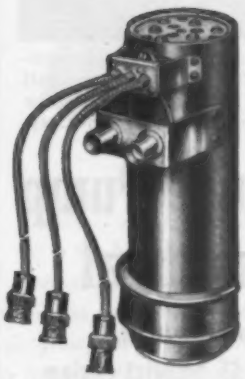
Address: **Western Lithograph Company, 600 E. Second Street, Los Angeles, Calif.**

LIQUIDOMETER Gravimetric and Volumetric Liquid Measuring Systems

Capacitor Type







Liquidometer capacitor type fuel quantity measuring systems feature the simplest and most fundamentally straight-forward circuits.

These systems can provide individual indication or totalizing of fuel volume or weight, low level warning, fuel transfer switching, airplane center of gravity control and other auxiliary functions.

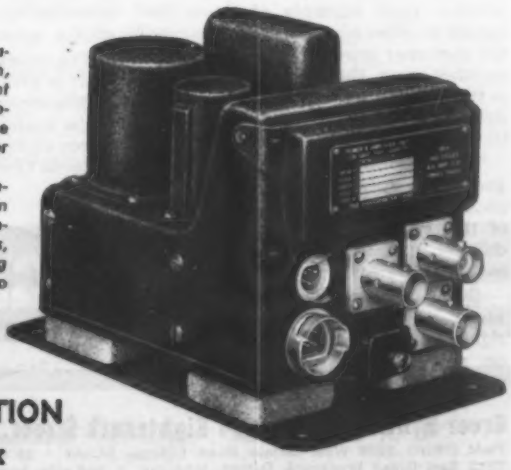
One type measures the weight of fuel based on an assumed relationship between its density and its dielectric constant. Another type is independent of fuel dielectric constant and is the only system which really gives "true" fuel weight indication. This type automatically combines the volume as measured by tank units and a dielectric reference condenser, with density as measured by a Liquidensitometer. An uncompensated type is also available.

If desired, Liquidometer fuel weight measuring systems can be arranged to provide volumetric "full' tank indication, regardless of the type fuel or its temperature. This feature is of material benefit during ground or airborne refueling operations.

Indicators, power units and tank units are rugged, compact and are of lightweight construction. They combine the features of sound progressive engineering, expert workmanship and best quality materials.

For more than three decades The Liquidometer Corporation has concentrated almost exclusively on the research, design and manufacture of liquid quantity measurement systems and the attendant installation and service problems. This specialization has proved to be of great value to the aircraft industry which has used Liquidometer products extensively since 1929.

In the capacitance method of fuel quantity measurement Liquidometer started extensive research back in 1940. It was the first to recognize such needs as compensation for fuel dielectric and density differences, correction for variations in fuel levels caused by varying attitudes of aircraft, and tank unit characterization to provide uniformly spaced indicator graduations.

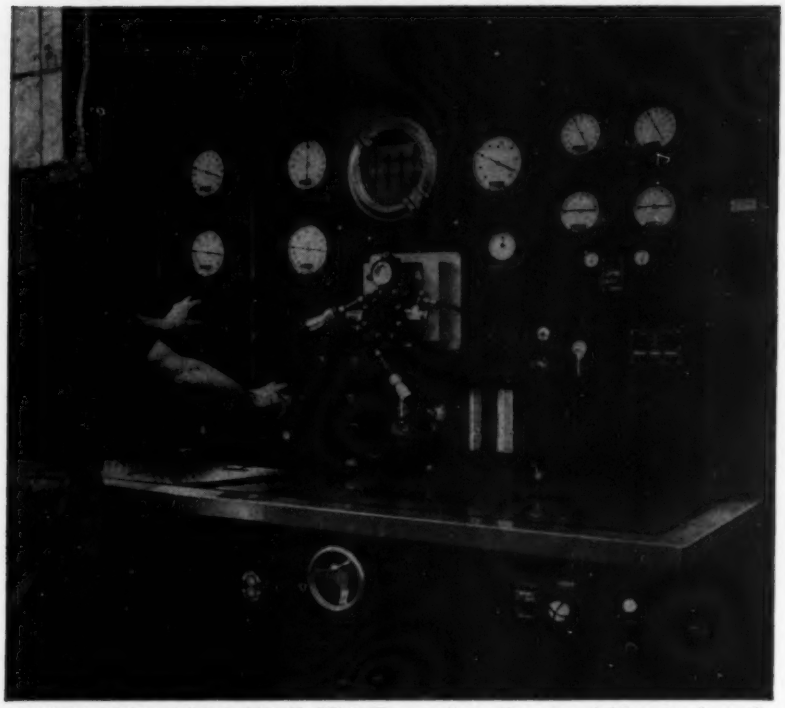


THE LIQUIDOMETER CORPORATION

Long Island City 1, New York

GREER TOPICS

Important News of Greer Equipment for Aviation and Industry



GREER LUBE PUMP TEST STAND supplies oil under rigid control conditions of temperature, flows to 10 gpm, pressures to 28 psi, and pump shaft speeds to 5000 rpm. It accurately checks the main oil pump assembly of the J-65 turbojet engine for the Wright Aeronautical Division, Curtiss-Wright Corp.

Greer Builds Complex Lube Pump Tester for Wright Aeronautical

Precision engineered from ten pages of rigid specifications to accurately test main oil pump assembly of J-65 turbojet engine

The test machine pictured above is another good example of Greer designed-to-order equipment. In this case, the customer provided specifications—in other cases, the entire test problem is turned over to Greer engineers who design and build precision equipment to do a specific job.

These out-of-ordinary problems need good men to solve them. There are *good* men at Greer with many years of this specialized experience that is difficult to find, perhaps impossible to match elsewhere.

Greer makes many standard test machines, too, that can be ordered right out of a catalog (a free copy sent on request). Though we call them standard machines, they are not mass-produced; each machine is slowly and painstakingly created, repeatedly tested for accuracy and dependability.

For, whether it is designed for aircraft or general industrial applications, testing equipment must have the complete confidence of those who use it. Greer equipment has that confidence—because Greer has *earned* it.

GREER
TEST EQUIPMENT

Greer Hydraulics Inc. 454 Eighteenth Street, Brooklyn 15, New York

Field Offices: 1908 West Cermak Road, Chicago, Illinois • 25 South Main Street, Dayton, Ohio 2832 East Grand Boulevard, Detroit, Michigan • and sales representatives in all principal cities

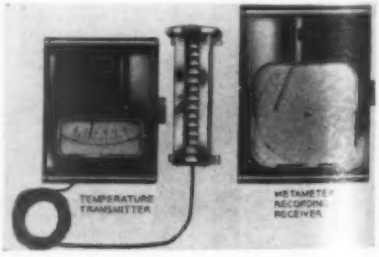
Servovalve

A single-stage servovalve designed for hydraulic servo systems where conditions call for fast response, reliability, and small size has been introduced by Midwestern Geophysical Laboratory. Adaptable to working pressures ranging from 200 to 3000 psi, the new valve weighs 2.8 pounds and is rated at approximately five horsepower.

The unit is of balanced symmetrical twin-piston design, permitting smooth operation under adverse vibration and lateral acceleration condition. Both pistons are readily accessible for mechanical actuation and may be used for safety limit stops in servo systems.

Other specifications of the Midwestern unit are: steady state leakage—0.1 to 0.2 gpm (adjustable); drain line pressure—15 psi maximum; torque motor balance current—20 ma; torque motor continuous current—40 ma. The piston and valve body offer hardened, precision lapped alloy steel construction, providing dependable operation under dirty oil conditions.

Address: **Midwestern Geophysical Laboratory**, 3401 S. Harvard, Tulsa, Okla.



Remote Temperatures

Remote measurement of atmospheric temperature for weather observation is provided by a device called Metatelemeter Telemeter, manufactured by The Bristol Company and recently installed at Baltimore (Md.) Friendship Airport.

Unit measures temperature at a remote point (up to 100 miles from observation post) and transmits readings over a pair of telephone wires to a recording receiver at the observer's location. Receiver indicates on a recorder chart the temperatures for a 24-hour period.

Address: **The Bristol Company**, Waterbury 20, Conn.

SYMBOL

The trade mark is literally the herald of American business . . . the symbol of an established institution. ➤ ➤ ➤ *It is the basic spirit of Democracy at work . . . it means many things. It exemplifies tradition, resourcefulness, free enterprise, initiative. At Republic it marks the milestones of progress in the vital field of producing materials necessary for the defense of Democracy.* ➤ ➤ ➤ *We are now making deliveries of the new swept-wing F-84F* **THUNDERSTREAK** *jet fighter. This latest, most formidable member of a rugged family, which included the Thunderjet and Thunderbolt . . . with increased fire power and greater mobility for strategic fighter or fighter-bomber operation, is produced for the U.S. Air Force and our Allies in the North Atlantic Treaty Organization.*

REPUBLIC AVIATION

FARMINGDALE, LONG ISLAND, N. Y.

Makers of the Mighty Thunderbolt · Thunderjet · Thunderstreak · XF-91

U. S. Domestic Airline Revenues and Expenses, 1952

Airlines	Total Operating Revenues	Passenger Revenues	Mail Revenues	Express Revenues	Freight Revenues	Excess Baggage Revenues	Non-Scheduled Transport Rev.	Total Operating Expenses	Aircraft Operating Expenses	Ground & Indirect Expenses	Net Operating Income Before Income Taxes
American	$ 182,229,129	$156,611,141	$ 7,787,782	$ 3,988,212	$ 9,506,777	$1,715,958	$ 844,144	$ 155,652,431	$ 78,939,478	$ 76,712,953	$ 26,576,698
Braniff*	22,822,491	20,433,520	897,274	420,691	588,448	175,425	160,298	21,519,151	10,669,513	10,849,638	1,303,340
Capital	40,395,703	35,817,651	1,016,843	1,086,926	966,201	228,073	754,897	38,376,165	18,311,512	20,064,653	2,019,538
Caribair	1,107,042	858,364	156,667	. . . .	33,128	7,866	18,051	1,054,621	440,862	613,759	52,421
C & S	14,244,566	12,397,203	972,813	355,670	325,784	102,022	47,667	12,805,475	6,180,240	6,625,235	1,439,091
Colonial	5,567,045	4,415,766	899,410	48,430	62,533	27,032	58,852	5,726,872	2,450,904	3,275,968	-159,827
Continental	10,204,661	8,479,960	1,116,174	85,012	210,280	61,848	158,214	9,442,093	4,912,749	4,529,344	762,568
Delta	28,088,468	25,041,854	1,027,191	432,676	907,796	324,708	107,114	24,273,475	12,210,365	12,063,110	3,814,993
Eastern	111,162,963	103,444,574	2,422,899	1,650,341	1,338,917	1,660,259	227,623	97,154,703	53,715,123	43,439,580	14,008,260
Hawaiian	4,402,844	3,169,328	559,187	54,428	522,192	60,710	14,455	4,186,611	1,663,920	2,522,691	216,233
MCA**	6,336,102	4,957,480	1,094,299	65,785	96,243	39,366	60,792	6,080,498	2,886,272	3,194,226	255,604
National	27,121,437	23,818,194	727,177	224,990	1,207,837	505,412	99,704	23,472,338	11,083,435	12,388,903	3,649,099
Northeast	7,099,454	5,570,123	1,177,265	100,117	112,998	33,572	25,019	7,392,355	3,321,337	4,071,018	-292,901
Northwest	36,455,154	32,027,193	1,656,800	673,680	1,152,863	228,640	239,011	37,208,987	18,675,394	18,533,593	-753,833
Trans Pacific	1,843,853	1,264,065	208,522	8,404	41,241	15,946	274,558	1,786,403	682,803	1,103,600	57,450
TWA	112,209,380	98,925,088	4,969,838	2,701,417	3,289,962	846,534	217,268	98,297,488	51,676,481	46,621,007	13,911,892
United	145,904,451	123,067,087	9,425,292	3,766,674	5,471,536	1,101,720	1,264,606	119,841,579	54,961,796	64,879,783	26,062,872
Western***	18,173,589	16,250,201	719,266	252,100	291,353	101,590	8,767	15,233,789	7,162,705	8,071,084	2,939,800
TOTALS	775,368,332	676,548,792	36,834,659	15,915,493	26,126,089	7,236,681	4,581,040	679,505,034	339,944,889	339,560,145	95,863,298

* Figures do not include operations of local service route 106 operated by Braniff as result of Braniff-MCA merger August 16, 1952.
** Figures for MCA are for period from January 1 through August 15, 1952, and do not include operations of local service route 106. Merger with Braniff Airways was effective August 16, 1952.
*** Figures include operations of former subsidiary, Inland Air Lines, which company was dissolved and operations merged with WAL April 9, '52.

U. S. Airline Balance Sheet Data, Dec. 31, 1952

Airlines	Total Assets	Current Assets	Investments & Special Funds	Operating Prop. & Equipment	Deferred Charges	Current Liabilities	Long-Term Debt	Deferred Credits	Operating Reserves	Capital Stock	Surplus
American	$ 158,149,985	$ 82,792,587	$14,953,410	$ 57,750,815	$ 2,630,949	$43,382,686	$ 30,000,000	$ 470,648	$	$46,467,665	$ 37,828,986
Braniff *	27,928,001	10,316,838	1,127,325	15,509,345	974,493	6,431,925	9,769,949	92,890	209,139	3,197,925	8,226,173
Capital	20,887,971	8,366,223	755,777	11,349,914	390,245	7,073,295	4,019,500	253,642	210,078	783,578	8,547,878
Caribair	597,057	363,574	1,593	207,531	11,293	166,568	. . . .	9,912	60,124	94,538	265,915
C & S	11,660,335	5,905,171	405,104	5,248,117	64,786	3,832,576	. . . .	13,252	. . . .	4,893,645	2,920,862
Colonial	3,296,357	2,202,340	39,185	885,333	169,499	1,112,899	. . . .	82,381	217,045	515,600	1,368,432
Continental	7,399,502	3,929,549	1,146,623	2,123,099	200,181	2,260,966	1,142,850	364,200	. . . .	500,000	3,131,486
Delta	23,308,354	11,339,733	2,584,346	9,154,434	229,841	7,896,544	. . . .	7,042	110,915	1,800,000	13,493,853
Eastern	122,305,416	55,531,593	6,947,219	59,077,722	748,882	34,665,589	38,000,000	156,664	2,994,595	2,478,601	44,009,967
Hawaiian	4,278,268	1,356,367	554,377	2,292,471	61,823	711,373	1,222,000	786	. . . .	1,750,000	594,109
National	31,267,583	13,662,414	2,346,906	14,966,857	282,313	6,517,028	12,000,000	51,519	368,735	1,010,702	12,330,301
Northeast	4,850,021	2,371,043	61,991	2,394,954	13,808	809,196	. . . .	13,899	58,939	1,708,851	2,259,136
Northwest	41,467,841	16,057,482	587,631	23,799,882	557,098	12,581,376	5,130,363	402,797	. . . .	17,734,205	5,619,100
Panagra	15,763,604	7,375,738	723,313	7,052,660	612,893	5,131,558	. . . .	224,507	1,838,863	4,750,000	3,818,676
PAA System **	202,704,113	71,588,703	15,285,977	91,045,272	24,069,443	62,927,596	27,955,000	8,293,455	4,494,928	6,145,082	92,888,052
Trans Pacific	766,836	180,640	3,183	265,576	194,605	723,380	. . . .	963	19,313	929,969	-906,789
TWA	150,287,554	56,440,775	909,016	91,716,854	911,108	51,520,268	45,185,406	1,972,800	. . . .	16,649,820	34,959,260
United	153,391,047	66,555,411	4,636,951	81,510,857	582,553	46,405,741	20,096,000	47	. . . .	46,677,124	40,212,135
Western	19,565,013	8,644,817	692,158	9,661,063	436,743	7,267,543	2,902,837	13,098	. . . .	715,213	8,666,322
TOTALS	999,874,858	424,980,998	53,761,085	486,012,756	33,142,556	301,418,107	197,423,905	12,424,502	10,582,674	158,802,518	320,233,854

* Figures include assets and liabilities of MCA which was merged into Braniff on August 16, 1952.
** Figures are preliminary and include $13,272,566 in estimated mail pay in excess of amounts accrues under temporary and final rates under review.
NOTE: Above tabulation includes overall balance sheet data for companies, domestic and international combined. Local service carrier data appear in a separate tabulation.

Alaskan Airline Traffic, 1952

Airlines	Revenue Passengers	Revenue Passenger Miles	Available Seat Miles	Passenger Load Factor %	Mail Ton Miles	Express Ton-Miles	Freight Ton-Miles	Total Ton Miles Rev. Traffic	Available Ton-Miles Flown	% Available Ton-Miles Used	Revenue Plane-Miles	Scheduled Miles	% Scheduled Miles Completed
Alaska *	34,926	17,250,000	67,522,000	25.65	467,312	37,066	2,017,808	4,494,308	10,313,852	43.58	2,924,672	2,877,989	86.59
Alas. Const.	35,600	3,098,000	5,441,000	56.95	47,095	18,618	29,364	377,598	680,312	55.50	754,429	550,288	92.83
Byers	980	94,000	303,000	31.02	6,610	. . . .	6,317	24,067	42,224	56.99	101,833	56,514	99.17
Cordova	6,588	593,000	1,689,000	35.12	12,148	. . . .	10,697	84,629	196,719	43.02	352,371	317,807	78.37
Ellis	40,509	2,346,000	4,250,000	55.20	16,067	22,889	. . . .	276,665	445,154	62.15	605,281	293,207	90.34
N. Consol.	19,799	4,953,000	13,786,000	35.93	190,971	5,757	322,597	1,045,600	2,010,263	52.01	1,292,136	876,897	93.92
Pac. North. #	60,098	42,303,000	72,885,000	58.04	522,225	. . . .	1,746,747	6,734,568	10,467,593	64.34	2,537,137	2,266,114	96.24
Reeve	3,946	2,065,000	4,028,000	51.27	106,972	. . . .	33,032	364,401	633,287	57.54	411,590	335,123	99.88
Wien Alaska	10,795	3,577,000	7,550,000	47.38	221,767	5,507	391,319	984,704	1,904,268	51.71	1,369,026	1,473,452	63.44
TOTALS	213,232	76,279,000	177,454,000	42.98	1,591,167	89,837	4,557,881	14,386,540	26,693,672	53.89	10,348,475	9,047,391	86.73

* Figures include both U.S.-Alaska and intra-Alaska operations. # Figures include both Alaskan and overseas operations.
NOTE: Above figures include both scheduled and non-scheduled operations.

representative of AVIANCA, Colombian

1952 Airline Salaries

Following are 1952 airline salaries as reported to CAB:

Hawaiian Airlines Ltd.

S. C. Kennedy, pres. and dir., $28,700.04 salary (up $450); **Ford Studebaker,** v.p., $16,200 salary (up $450); **David Watson,** v.p. and treas., $13,700.04 salary (up $450); **John Pugh,** secy., $10,080 salary (up $760); **Brian Cooke,** asst. treas., $8,820 salary (up $579).

Pan American World Airways, Inc.

J. T. Trippe, pres., $20,000 salary (down $3,125), $2,400 dir. fee; **S. F. Pryor,** v.p. and asst. to pres., $27,000 salary (up $958), $2,350 dir. fee, $12,000 bonus and indirect compensation; **J. C. Leslie,** v.p., $26,000 salary (up $2,792), $1,300 dir. fee, $10,000 bonus and indir.; **H. J. Friendly,** v.p. and gen. counsel $27,000 salary (up $1,917), $900 dir. fee; $12,000 bonus and indir.; **E. Balluder,** v.p., $25,000 salary (up $958), $10,000 bonus and indir.; **F. Gledhill,** v.p., $27,000 salary (up $1,917), $1,300 dir. fee, $12,000 bonus and indir.; **H. M. Bixby,** v.p., $14,000 salary (up $958), $1,750 dir. fee, $5,000 bonus and indir.; **A. P. Adams,** v.p., $23,000 salary, $7,500 bonus and indir.; **R. B. Adams,** v.p., $20,000 salary, $4,000 bonus and indir.; **W. G. Lipscomb,** v.p., traffic and sales, $25,000 salary (up $2,125), $9,000 bonus and indir.; **A. A. Priester,** v.p. and chief engineer, $20,000 salary, $5,000 bonus and indir.; **J. S. Woodbridge,** comptroller, $21,000 salary (up $2,125), $7,000 bonus and indir.; **R. G. Ferguson,** treas., $21,000 salary (up $2,417), $7,000 bonus and indir.; **H. P. Morris,** secy. and gen. attorney, $14,000 salary (up $958), $2,500 bonus and indir.; **W. L. Morrison,** v.p., $25,000 salary (up $958), $9,000 bonus and indir.; **H. R. Harris,** v.p., Atlantic Div. (resigned Dec. 31, 1952) $25,000 salary, $9,000 bonus and indir.; **C. M. Young,** v.p., PAD, $21,000 salary (up $958), $4,000 bonus and indir.; **H. E. Gray,** v.p., Atlantic Div., $25,000 salary (up $2,125), $9,000 bonus and indir.; **H. W. Toomey,** v.p. (entered office Dec. 1, 1952), $1,667 salary, $208 bonus and indir.; **A. M. Archibald,** asst. v.p. and asst. secy., $13,500 salary (up $958), $4,000 bonus and indir.; **H. H. Berke,** asst. v.p., $18,000 salary (up $958), $5,000 bonus and indir.; **J. C. Cone,** asst. v.p., $16,000 salary (up $958), $5,000 bonus and indir.; **W. M. McEvoy,** asst. v.p., $12,791 salary (up $791), $2,500 bonus and indir.; **J. D. Fenton,** asst. v.p., $17,000 salary (up $958), $4,000 bonus and indir.; **A. Hiatt,** asst. comptroller, $11,000 salary, $1,500 bonus and indir.; **R. P. Monson,** asst. treas., $14,000 salary (up $958), $4,000 bonus and indir.; **E. G. Rothrock,** asst. secy., $9,724 salary (up $1,424), $750 bonus and indir.; **J. J. Cantwell,** asst. secy., $8,373 salary (up $984), $500 bonus and indir.

Obituary

Matt J. Ryan, 53, Marshall, Minn., director of secondary airports for the Minneapolis-St. Paul Metropolitan Airports Commission, died April 26. He had been in airport work for 25 years and was a nationally recognized authority on small airports.

Airline Commentary

By Eric Bramley

MEMO TO ED BERN, vice president-sales of Pan American-Grace Airways: Please, please don't send any more envelopes. We're convinced.

Reason for this memo is Panagra's new advertising program which, in our opinion, is quite a story. Have you noticed the new national ads? If so, have you noticed anything different?

Last year, Panagra got curious about what types of people actually used its services, and whether advertising was directed to the right market. Traffic officials were somewhat taken aback when a survey showed that the average age of Panagra's passengers was 54.7. They started to wonder about the value of ads that showed pictures of devastating young girls lolling on sunny beaches and being ogled by young Tarzans.

Result has been a radical change in advertising policy. Ads now show people in the middle-age and older brackets—people who Panagra believes have the time and money to go places.

As one of our Panagra friends told us: "These older people don't want to be breaking their arches dancing some wild fandangoes, and they don't want a hectic, exhausting tour. They want splendid scenery, comfortable beds and no rushing about. There are more than 35 million of these people in the U.S., and Panagra is going after them. It has the courage to back up its findings by advertising to those who have a touch of grey in their hair, or no hair at all."

Now, about those envelopes. The airline has had a flood of mail from prospective customers all over the country as a result of the ads. Bern wanted to make sure that we were aware of this response. So, after removing the letters, he's been sending us the envelopes—682 of them so far. Although the airline hasn't heard from all the 35 million people, it's doing all right.

One leading travel agent (who said he never sent laudatory letters to carriers) wrote Panagra that it's "one of the wisest moves ever undertaken by any air or steamship line. . . . In my 24 years in the travel business, I have made my money from the 45 to 80-year-old group. . . . The ones who have the time and the money are never shown (in ads)." As we said before, we're convinced.

•

For your information, Harmar D. Denny, the newest member of the Civil Aeronautics Board, did not pull a blooper when he was being sworn in a few weeks ago. Bill Henzey, who covers CAB for AMERICAN AVIATION, attended the ceremony and was somewhat astonished to note that the 67-year-old ex-Congressman used the Boy Scout sign while the oath was being administered by Chairman Oswald Ryan (see photo). Henzey cleared it up later in a conversation with Denny. The new member, it seems, is a member of the Boy Scouts' national executive board. "I've been in Scout work for 39 years. It's a good thing to rededicate ourselves at a time like this," he said. So, you can see that Denny's no tenderfoot; he knew what he was doing all the time.

•

Neat sales gimmick being used in another industry: The Virgin Isle Hotel, on St. Thomas, Virgin Islands, gives all guests paid-up insurance policies with Lloyd's of London, guaranteeing nice warm weather during their stay, any time between December 15 and April 30. The policy says that if on any day the mean temperature, as published by the U.S. Department of Commerce Weather Bureau, St. Thomas, is less than 70 degrees, the room charge for that particular day will be waived. Hotel's sales literature, incidentally, prominently mentions services of Pan American and Eastern.

Assistant ground services manager, Omaha, 25 years.

People

AIRLINES

Lewis Carter Burwell, Jr., former president of Resort Airlines, has been elected a vice president and assistant to the president of The Flying Tiger Line. Burwell will be in charge of the certificated all-cargo carrier's Washington office.

James C. Robertson has been appointed to the newly created position of assistant to **Frank C. Judd,** vice president of operations for Northwest Airlines. Previously, Robertson was district traffic and sales manager of Hawaiian Airlines in Honolulu.

Juan Ucros has been named general representative of AVIANCA, Colombian National Airways, in the United States, Jamaica, and Bermuda. In his new post, Ucros will be in charge of all matters concerning the company in his territory.

Lou Allen, for 10 years in the sales department of American Airlines at Washington and 11 years previously with Pan American, has resigned.

Jacques Elsner, formerly chief of operations and flight engineering for Air France at Orly Field, Paris, has been named research engineering manager of Air France's North, Central American and Caribbean Divisions.

Helen Olson, formerly women's representative for United Air Lines in Chicago, has been promoted to the post of director of women's activities. Miss Olson will make her base in Chicago at United's general offices.

Jordan

Olson

MANFACTURING

William C. Jordan has been named executive vice president and general manager and a director of Hiller Helicopters of Palo Alto, California. Jordan is a former president of Curtiss-Wright Corp.

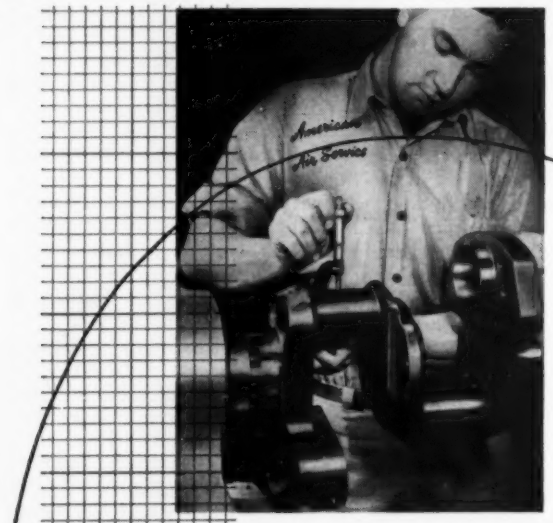
Edward J. Horky has joined Patushin Aviation Corp. as vice president in charge of engineering from North American Aviation, Inc., where he was chief technical engineer.

Clifford E. Burt, assistant factory manager of Chance Vought Aircraft Division of United Aircraft Corp., has been promoted to factory manager, replacing **Bertram D. Taliaferro,** who is now retired.

Paul Winkler has been named vice president and director of sales for Bardwell and McAlister. Winkler was previously sales manager of the corporation's Rosan Division.

Franklin L. Snyder, C. Swan Weber and **Leslie E. Lynde** have been elected vice presidents of Westinghouse Electric Corp. Snyder, former manager of the Aviation Gas Turbine Division, has been assigned to the staff of **L. E. Osborne,** executive vice president of the Defense Products Division. Weber, former manager of the Eastern District succeeds Lynde as head of the Washington office who is taking over the Aviation Gas Turbine Division.

L. Eugene Root has been named to head the newly created Development Planning Department of Lockheed Aircraft Corp. Root, who joined Lockheed from the Rand Corp., will advise management on long-range civil and military aircraft trends.



performance pattern

To the airline... to the fleet owner... to the maintenance and overhaul depot which has a parts and service problem, plus a need for unquestioned workmanship and material ...we announce the presentation of a new, modern brochure. ➢ ➢ Written in the language of our industry ...illustrated in a manner which will emphasize the care and attention for the reader's interest... here is an up-to-the-minute publication of our complete facilities which stresses the resources and equipment of this organization. *Sent to executives or engineers by application on your company stationery.*

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AMERICAN AIR SERVICE INC., CHARLOTTE, N. C. WHOLLY-OWNED SUBSIDIARY

AEP

The following employes have recently completed 20 years or more of service in the aviation industry:

- **Paul Clark,** Curtiss-Wright Corp. Chief draftsman, Caldwell, N. J. 30 years.
- **Elmer C. Schwab,** Curtiss-Wright Corp. Production engineering, Caldwell, N. J. 26 years.
- **R. M. Land,** United Air Lines.

Assistant ground services manager, Omaha. 25 years.

• **W. B. Meisner,** United Air Lines. Technical staff assistant, Denver. 25 years.

• **K. H. Robinson,** United Air Lines. Station ground services manager, Spokane. 25 years.

• **O. C. Enge,** United Air Lines. Passenger service general manager, Denver. 20 years.

• **Richard Kruyd,** Curtiss-Wright Corp. Gage engineering, Caldwell, N. J. 20 years.

• **Evangeline Valdez,** Pan American World Airways. Secretary, Brownsville. 20 years.

• **W. P. Feiten,** United Air Lines. Economic controls manager, San Francisco. 20 years.

• **H. R. Van Liew,** United Air Lines. Captain, New York. 20 years.

• **W. J. Hunter,** American Airlines. Captain, Memphis. 25 years.

• **Lawrence D. Shannon,** Trans World Airlines. Line maintenance, Los Angeles. 25 years.

• **H. F. Blossey,** United Air Lines. Manager, ground services, Detroit. 25 years.

• **R. C. Coulter.** United Air Lines. Captain, San Francisco. 25 Years.

• **F. D. Koonce,** United Air Lines. Janitor, Cnicago. 25 years.

• **H. P. Little,** United Air Lines. Captain, San Francisco. 25 years.

• **J. S. Martin,** United Air Lines. Maintenance procedures, San Francisco. 25 years.

• **E. D. Parencce,** American Airlines. Operations, Buffalo. 20 years.

• **C. A. Schenk.** American Airlines. Flight dispatcher, Fort Worth. 20 years.

• **Oliver J. Studeman,** Pan American World Airways. LAD operations manager, Miami. 20 years.

• **James A. Maxwell, Jr.,** Pan American World Airways. Sector chief pilot, Houston. 20 years.

• **Russell J. Dick,** Trans World Airlines. Captain, New York. 20 years.

• **Walton H. Smiley.** Trans World Airlines. Regional operations director, New York. 20 years.

• **Earl J. Miller,** Trans World Airlines. Director, customer relations, New York. 20 years.

• **J. A. Rose,** United Air Lines. District sales manager, Oakland. 20 years.

• **Bartlett Stephens,** United Air Lines. Flight manager, Seattle. 20 years.

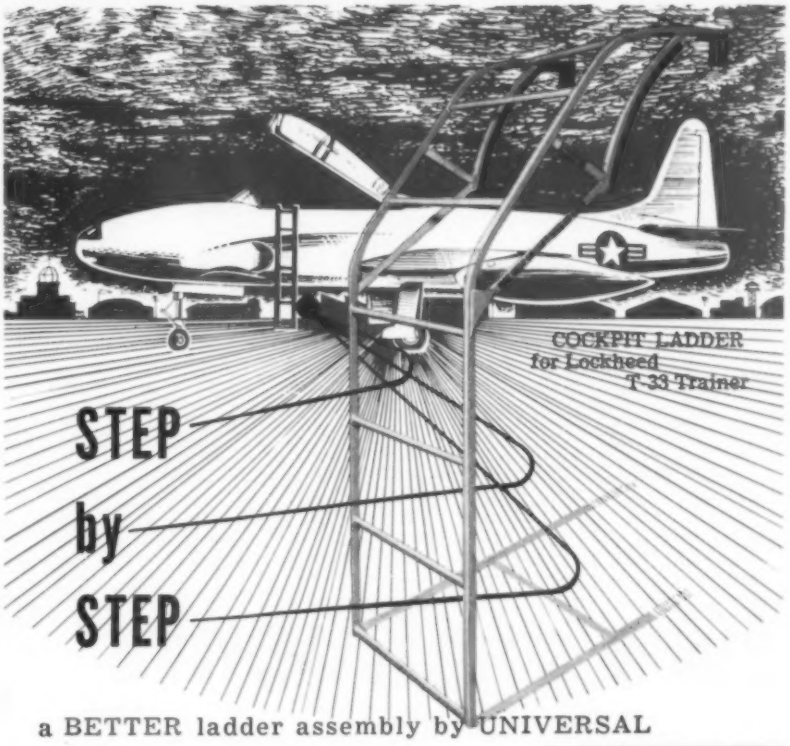
• **V. W. Vaughn,** United Air Lines. Flight manager, Denver. 20 years.

• **John Edwin Hall,** Trans World Airlines. Foreman, paint shop, Kansas City. 20 years.

• **Charles S. Hawker,** Trans World Airlines. Assistant foreman, line maintenance, Kansas City. 20 years.

GOVERNMENT

Kenneth L. Vore has been appointed director of transportation for the Department of Defense. Prior to this appointment, Vore served as director of the military traffic service in the office of the Secretary of Defense.



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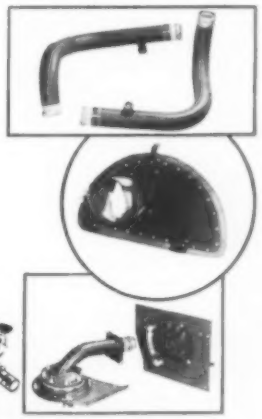
Write, phone, wire ... let us help develop and quote your complete assembly ... either on production or experimental runs! Join hundreds of satisfied UMPCO customers. Act today!



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on

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this makes the difference

These are our managers in key spots throughout the hemisphere. For between-the-Americas travelers, these genial gentlemen are invaluable. Their know-how and efficient offices make a whale of a difference.

Yes, these are the men who practically move mountains — to set up government, business or banking contacts, schedule survey trips, follow through on all the little details that are so important to your passengers.

The real proof that our managers are doing a fine job comes from travel experts who've flown through Latin America with us. To a man, they've tipped their hats to our trips and our treatment. In fact, they've sent us photographs and statements endorsing our service 100%. All this makes us very proud indeed!

CHARLIE SOUTH, Rio

FOLGER ATHEARN, Lima

DON GREFE, Buenos Aires

it's

BRANIFF

INTERNATIONAL AIRWAYS

Love Field • Dallas, Texas

CAB to Analyze Agreement

What may develop into a second omnibus proceeding involving large irregular air carriers was started by the Civil Aeronautics Board recently. Directly involved are the Independent Military Air Transport Association and the Aircoach Transport Association, Washington groups representing most of the 60-odd non-scheduled carriers.

At issue are agreements, resolutions, amendments to by-laws and similar proposals of the associations which, according to CAB, involve a broadening of the scope of the activities of the groups.

In March, 1951, CAB authorized both IMATA and ACTA to act as liaison groups for member carriers in arranging military contract transportation. In its recent order instituting the new investigation, CAB said it has no quarrel with the current authorizations of the associations.

"Our purpose," the agency said, "is to develop information to aid us in the analysis of the various ACTA and IMATA agreements which involve a broadening of the scope of the activities heretofore specifically approved by the Board, in light of the operating experience of the membership of these organizations under the Board authorization orders of March, 1951."

Typical of the agreements involved, CAB said, is a resolution whereby the membership of IMATA amended that organization's articles of association to provide that IMATA, as agent for its members, would provide charter services to non-military government departments, private corporations, and individuals."

The case, to be started in the near future, has been termed "The ACTA and IMATA Agreements Case."

PAA Ferry Flights Under Fire

The Civil Aeronautics Board has taken under advisement arguments of its Enforcement Office and Pan American World Airways on the thorny problem of whether Pan Am's granting of free transportation on New York-Miami ferry flights is in violation of the Act.

Pan Am contends the "novel theory" of the Enforcement Office has industry-wide implications. All airline courtesy flights, Pan Am told CAB, such as those used to acquaint the public and the press with new routes, equipment or services, have been and will be illegal if the Board adopts the theory.

Acting enforcement chief Robert Burstein, pointing his argument at the Pan Am operation, explained his side this way:

- **Pan Am has a certificate** for foreign operations;
- **Pan Am has a charter tariff** on file naming rates for off-line operations;
- **Pan Am has engaged** in charter services.

"In other words," Burstein said, "Pan American's business is to carry people all over" and thus, the New York-Miami ferry operation comes under the provisions of the Act.

CAB MISCELLANY

Transportes Aereos Nacionales, S. A. has asked CAB to renew its foreign air carrier permit which authorizes service between Honduras and Miami via Havana. Present permit was scheduled to expire June 12, 1950.

•

Air America, Inc., has joined **Aircoach Transport Association,** bringing total membership to 40 large irregular carriers.

•

Mackey Air Transport, holder of temporary Florida-Nassau certificate, wants extension from Nassau to Havana and back to Florida.

CAB has instituted a proceeding to determine if the public interest requires an interchange service via Northwest and Capital between Chicago and points west on NWA and Detroit, Cleveland, Pittsburgh, and New York.

•

Central Airlines has applied for a new route extension from Muskogee, Okla., to Little Rock via Fayetteville, Fort Smith, and Hot Springs. It wants CAB to grant an interim exemption so it can operate the routes pending decision on the route application.

CAB News

AS OF NOW . . .

THE FLYING TIGER-SLICK MERGER CASE is tentatively scheduled for hearings on June 1, but the case has run into at least a temporary snag. American and United want CAB to consider, in addition to the merger proposal, the issue of renewal of Flying Tiger's and Slick's all-cargo certificates which are scheduled to expire August, 1954.

If CAB grants the American and United motions, the merger case would thus be expanded and presumably take much longer to complete. FTL and Slick, of course, oppose the expansion motions. It's up to CAB to decide.

One phase of the **PIONEER AIR LINES MARTIN 2-0-2 MAIL RATE CASE** is now officially off the books. That is the portion where CAB ruled against higher mail pay for Martin operations. A Pioneer petition for reconsideration of that ruling has been disposed of. But still pending is that phase of the case involving how much mail pay Pioneer will get for the past year since its Martin rate has been turned down.

CAB initially proposed $1,000,500 for the year beginning April 2, 1952, based on what Pioneer would have needed if it had operated DC-3's. Pioneer has asked for $1,400,000. CAB staff people are now thinking in terms of $1,131,000. At any rate, it's far below the $2.2 million Pioneer needs to cover the actual Martin operations conducted.

RECENT CAB DECISIONS

- **Trans World Airlines** granted indefinite authority to suspend services on a year-round basis at Grand Canyon, Arizona, to be effective until "an airport with hard-surface runways suitable for modern trunk-line aircraft is available at Grand Canyon."
- **Riddle Airlines** granted exemption to carry "perishable commodities" from Stuart, Florida, to New York City, for one year.
- **United Air Lines'** current suspension of service at Rock Springs, Wyo., in favor of Frontier Airlines, will be investigated in formal proceeding. Pending outcome, United may continue to suspend at the point under a temporary exemption.

CAB CALENDAR

June 1—Hearing in Flying Tiger-Slick Merger Case. Washington, D. C. (Docket 6047).

June 1—Hearing in Tariff Liability Rules Investigation, Washington, D. C. (Docket 4059).

June 22—Hearing in Trans-Pacific Certificate Renewal Case. Washington, D. C. (Docket 5031 et al.).

July 6—Hearing in West Coast-Hawaii Case. Washington, D. C. (Docket 5589 et al.).

The BENDIX IGNITION ANALYZER
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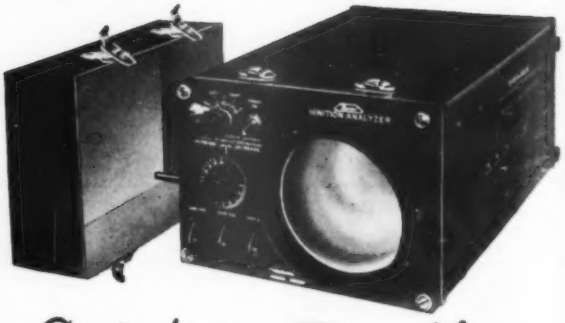
It is hardly an exaggeration to state that no other single piece of equipment pays such big dividends in engine operating efficiency and maximum safety as does the Bendix Ignition Analyzer.

Detailed literature on request.



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The Bendix Ignition Analyzer is available for either airborne or portable-airborne installations. It can be used with either high or low tension magneto or battery ignition. It is the ignition analyzer that can predict spark plug failure before it occurs . . . make an efficient check of more than one spark plug at a time and do so on a large, easy to read screen . . . yet it costs less than comparable analyzers.

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Brouwer Building, 176 W. Wisconsin Avenue, Milwaukee, Wisconsin • 582 Market Street, San Francisco 4, California

International Report

FIRST OF ALITALIA'S three Convair 340's was recently flown to Italy. The new planes will enable the airline to open new routes in Europe.

New Equipment Due for KLM, Air France

Air France and KLM Royal Dutch Airlines are soon to receive substantial quantities of new equipment, notably including Lockheed Super Constellations. KLM expects to take delivery of its first Super Connie by July 3 and three more of the turbo-compound-powered ships by October. There will then be a gap of about nine months until deliveries of the remaining nine planes start.

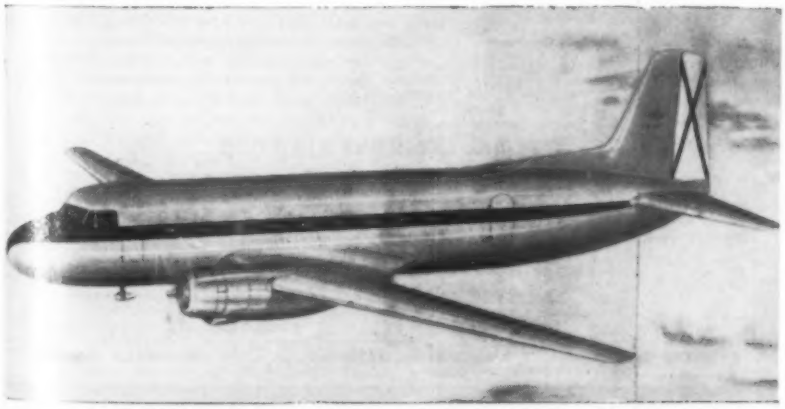
All the 13 Super Connies should be in KLM's hands by November, 1954. Deliveries of KLM's 12 Convair 340's will start in August and extend through January, 1954, with one aircraft due in August, five in October, one in November, three in December and two in January. The Dutch airline will also receive two Douglas DC-6A Liftmasters this year—one in August and one in November.

Delivery schedules for Air France's new fleet shape up as follows:

• **Super Connies:** one in June and one in July; three in September and three in October. Dates for the two remaining planes are not available. Trans-Atlantic service with the Super Connies will start in July.

• **Comet IA's:** one in May, one in June, and one in July. Initially it was planned to match Comet schedules from Paris to the Middle East with Super Connie schedules from New York to Paris, thereby cutting about five hours from present times. The plan may be altered by the need for jetliners on the Casablanca run where independent airline UAT is already operating Comet IA's.

• **Vickers Viscounts:** the first three have already been delivered to Air France and the next three will be received at monthly intervals. Dates for the final six turboprop transports are not available. Viscount service on European routes is expected to start this month.



SPAIN'S CASA 207 33-seater transport is likely to make its first flight this summer. Static tests are now under way.

First Mystere IV to Fly in April '54

The early start on production of the Dassault Mystere IV fighter, made possible by France's order for 10 of these fighters last January, will enable the first NATO-sponsored Mystere IV to fly by April, 1954.

Work is well under way on 18 pre-production models, 10 to be equipped with the NATO standard Rolls-Royce Tay engine and eight with the French-designed Atar or the Rolls-Royce Avon. Two of the eight will be night fighter versions of the Mystere, designated IVN, and will use the Atar engine. The first of the French government's 10 Mystere IV's will be completed in September.

INTERNATIONAL BRIEFS

The Chilean Air Force has purchased **three Bell H-12 helicopters** for reconnaissance and rescue operations. They will be the first rotorcraft to be operated in Chile. Linea Aera Nacional, the Chilean flag airline, is reported to be interested in flying large helicopters on a shuttle service between Santiago and Valparaiso.

• •

Fairey Aviation has completed a program of testing **vertical-take-off aircraft.** The technique has been developed with the use of models, some of which have been powered by rocket motors and stabilized by automatic pilots.

• •

Switzerland's Sulzer company has been licensed by de Havilland to build the **Ghost jet engine** for installation in **Venom fighters** manufactured under license by the Swiss Federal Aircraft plant at Emmen. Production is expected to be under way by the end of the year.

• •

Legislation enabling aircraft and engines to be **imported duty-free** was recently submitted to parliament by the **West German government.**

• •

The first three (of 12) **Lockheed T-33 jet trainers** for the **Norwegian Air Force** supplied under MDAP recently arrived at Stavanger airfield.

• •

SNCA du Nord is working on a **ground-attack version of its Nord 1203 Norecrin** personal aircraft.

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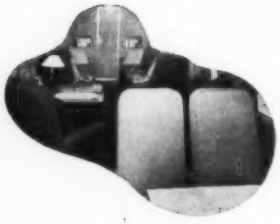

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Letters

(Cont. from p. 6)

With this as a basic principle, the Helicopter Council has proceeded to carry out its various activities without resort to, or encouragement of, the type of publicity which so harassed the personal aircraft industry in the immediate postwar years. You will not from the attached membership list that the Council is composed of businessmen who are pretty well hardened to the facts of life.

I think it pertinent to point out to you that Mr. Tinsley, in the article to which you refer, at no time quoted or made reference to any comments by those of us on the production line, aside from a factual remark of Larry Bell's. His article was frankly labeled by himself as his personal reaction to his own investigation of the industry, during which he spent a great deal of time with the actual operators of helicopter services and flew with them on their various routes. He also visited many of the helicopter plants, including our own.

Going back to a previous paragraph, I repeat that the helicopter industry is extremely conservative in expressing its opinion of the future. We all have our own opinions but they are uniform insofar as the sound growth of the industry is concerned.

When it comes to the *Colliers* illustration to which you take exception, we must recognize the prerogative of writers and artists to express themselves in their own fashion. Basically, Mr. Tinsley's article, if published within the next decade or so, might well be a factual report of services then currently in operation. In any event, he thinks so, and who are we to say him Nay?

B. L. WHELAN
Chairman
Helicopter Council
Washington, D. C.

RECORDED ANNOUNCEMENTS

To the Editor:

I read with great interest your article in the March 16 issue of AMERICAN AVIATION concerning the abuse of public address systems over the country and I regret that I was not in the office when you visited the Seattle terminal, thereby missing an opportunity to demonstrate to you the automatic public address installation here.

This system has been in use since the airport opened in July of 1949 and has served us well in accomplishing the very thing which you have recommended in the last paragraph of your article. All flight arrival and departure announcements are recorded by professional men and miscellaneous use of the system is restricted.

A. S. DIBBLE
District Passenger Service Manager
United Air Lines
Seattle-Tacoma Airport, Washington

(The Seattle-Tacoma International Airport uses a Seeburg Select-o-matic 100 for paging and flight announcements, and the Seeburg Select-o-mat 200 for program music. The No. 100 has space for 50 records of 100 sides and is the same machine used in bars, restaurants, etc. A professional radio announcer cuts the records announcing flight arrivals and departures for each airline. Special announcements are made directly over the public address system, otherwise all announcing and music are mechanically reproduced.—Ed.)

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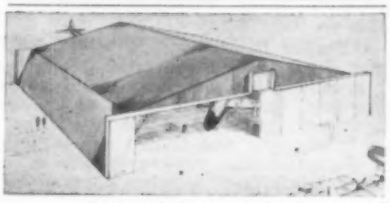

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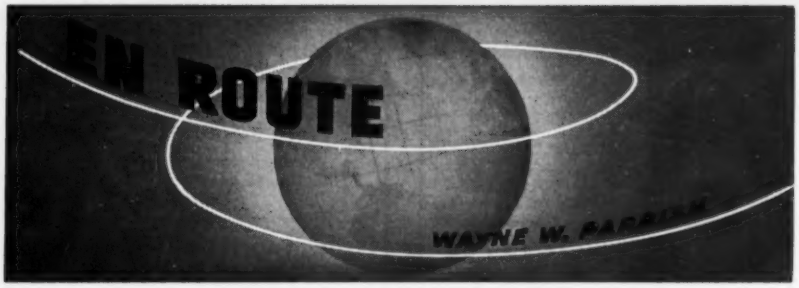

Overnight at Medford

This is all about wholesome stewardesses, early morning flight departures, and a little bit of airline history.

If you read this page last issue you'll recall that I was flying up the west coast to Seattle the hard way—by local service airlines hitting all the stops—and because of an SWA mechanical at Arcata-Eureka in northern California I arrived at Medford, Oregon, five or six hours too late to make my connection to Seattle with West Coast Airlines.

The next flight out of Medford was a United DC-3 at 6:45 a.m. and I snagged a seat on it because I had an appointment at Boeing Airplane Co., which I'd be late for in any case, and there was no sense in taking a later WCA flight which used up most of the day getting to Seattle. So I turned in for a short night's sleep at the Hotel Medford, about which one can say little except that it's a hotel.

Up at the indecent hour of 5:45 a.m. and **Ed Le Shane** of WCA came by and took me to the airport. Medford has a brand new terminal, quite a good one, but the coffee shop hasn't been opened yet, so I wasn't sorry when the UAL flight was called because breakfast was promised and I don't feel that the day has started until I've had my cup of coffee.

Booming Happiness

I wasn't exactly in tip-top shape. Half asleep. Bleary-eyed. No coffee. Late for my appointment at Boeing. Short sleep. And as I go up the steps into the DC-3 the stewardess beams with a broad smile and says in a cheery voice ringing with all the vigor of a track miler who's just completed training for next day's meet, "Good morning, and how are you this morning?"

Ugh. So who put all this wholesome pink-cheeked vim and vigor into this dame at such an unholy hour of the morning? So I gotta look bright and happy? So I gotta be pleasant and no coffee yet? What sort of vitamins does United give these babes to make 'em so peppy early in the morning? Does the training book says they *have* to look so blasted happy and radiant? Whatsamatter, can't they just be naturally glum and forget the civic greetings? Don't they know its inhuman to be pleasant before 8 a.m.? Nothing like this on the railroads.

Feeling like a reluctant sinner who was about to be saved despite himself, I grumbled out some sort of liturgical response that might pass as "good morning." After all, I was a stranger in those parts and United might have a regulation that passengers who can't shout "Hallelujah" at dawn are bounced off the plane. So I quietly cussed those training courses which teach those gals to rise and shine and pour out the goodwill no matter what the hour, and plopped into my seat to read the morning paper to see what devilment the world had been up to while I had been sleeping.

Eyes Open

United's good breakfast put new life into my creaking and aging frame. My eyes opened sufficiently to look down on that green Oregon paradise which lies just west of the mountains. Prosperous farms, mountain streams, comfortable and fresh-painted homes—I got the same stimulus I've always gotten from the Northwest. It's a beautiful part of the country. I could well understand why people like to live out there.

By the time we had stopped at Eugene and Salem and were coming over the spread-out city of Portland and the great Columbia River I was ready to be a civic booster myself. Waiting for me at the airport was **Doug Billmeyer** of WCA who had bought a ticket on UAL to accompany me to Seattle.

In the United terminal I ran into **Seely V. Hall**, general manager of ground services for United, who was on his way to The Dalles up the Columbia River. Seely is one bird who really knows the airline business backwards and forwards and it was rather appropriate that I should meet him, because Medford, where I'd spent the night, dates back into airline history along with him.

Pioneering Days

Medford was one of the earliest towns in the country to get airline service. Back in 1928 it was on the route of Pacific Air Transport, one of United's ancestors, and Seely Hall was the Medford manager in those days.

It must have been a rugged operation. If you wanted to fly from Seattle to Los Angeles you had to take a plane from Seattle at 2 p.m. and overnight in Portland, leave Portland at 7 a.m. next morning and arrive in Los Angeles at 6:15 p.m. My calculations indicate this meant a 28 hour and 15 minute trip (six hours and 10 minutes today).

Or you could take a train from Seattle at 11:45 at night which got to Portland in time to catch the PAT plane. Just why PAT didn't fly right through I don't know; maybe Seely Hall can tell me.

Northbound back in 1928 you just couldn't fly all the way because the PAT plane left Los Angeles at 12:01 midnight and no passengers were carried at night, so you had to board the plane at San Francisco.

The Seattle-Los Angeles fare was $125 in those days. Medford was an essential stop because of the short flying range of the early planes. Today it gets all the short-haul flights, plenty of them, and is the connecting point between Southwest and West Coast, in addition to getting United service.

On to Seattle

So 25 years after Seely Hall was pioneering PAT at Medford I meet him by chance in the same area. And another pioneer who managed PAT's Seattle office in 1928 was **George Strehlke**, who is sales manager at Chicago now for Pan American Airways. You may not realize it today, but scheduled air service got its biggest start out in the Northwest.

Well, to get back to the story. Billmeyer and I flew on to Seattle and got some good glimpses of that chain of mountain peaks sticking out above the clouds to the east of us. Someday I'd like to see that mountain range without any clouds around. At Seattle-Tacoma Airport, which has one of the better terminals in the country and which is managed by my friend **Earl Bigler**, we were met by **Harold Mansfield**, director of public relations for Boeing, and his assistant **Gordon Williams**.

In no time at all I was going through some of the Boeing plant and visiting with top company people. Next issue I'll tell you about a fascinating air trip into eastern Washington and Idaho and Hell's Canyon on the Snake River.

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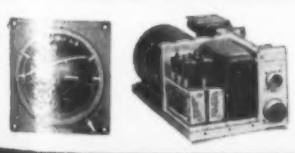

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First swept-wing jet attack bomber ever built for the Navy, A3D-1 is in the 600 to 700 mph class—and can operate on missions at 40,000 feet. Key to its speed, range, and striking power is the simplicity and lightweight strength of its Douglas airframe—which has already become a springboard for new configurations. A3D-1 has passed its early flight tests, and is already in production for delivery to the United States Navy.

Performance of the A3D-1 is another example of Douglas leadership in aviation. Developing planes that can be produced in quantity—*to fly faster and farther with a bigger payload*—is the basic rule of Douglas design.

Be a Naval flier—write to: Nav Cad, Washington 25, D. C.

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News at Deadline

First DC-7 Flight

The first flight of the Douglas DC-7 took place at 11:38 AM PDT, May 18. It was flown by Douglas chief test pilot John Martin for two hours and 10 minutes and was reported by Martin to perform "like a dream."

The DC-7 is now scheduled to go into an accelerated test program with the target date for certification in October, 1953, and first delivery to American Airlines set for late fall.

Fare Investigation Dropped by CAB

The general investigation of airline passenger fares has been discontinued by the Civil Aeronautics Board in a vote that left Members Josh Lee and Joseph Adams dissenting. An investigation will be carried on by the CAB's staff, instead.

Commenting on whether or not fares are excessive, the Board observed: "Over the entire period from 1938 through 1952, due to the fluctuation of earnings, the returns of the trunklines are much more reasonable than the results of the last few years alone would indicate." Average rate of return on investment during that period: 8.3%.

Jet Engine Strike Ends at G-E Plant

After 65 days the strike at the General Electric Co.'s J47 jet engine plant at Evendale, Ohio, has been ended. The AFL-Machinists and the CIO-Autoworkers have agreed to accept an hourly increase of six to eight cents, plus fringe benefits, approximately what the company had offered before the strike began.

Sub-contractors and suppliers have been told to resume shipments. Some such firms had continued production and stored their output in anticipation of an end to the strike, but others had been forced to lay off workers.

Bids Asked on RCAF Patrol Bomber

Bids have been invited from three U. S. manufacturers for a very long range patrol bomber for the Royal Canadian Air Force. Previously Bristol Aeroplane Co. and Canadair, Ltd., had been contacted; Douglas Aircraft, Fairchild Engine and Airplane, and Lockheed Aircraft have now been added to the list.

Early plans to have Canadair adapt the Bristol Britannia for the purpose are understood to have been abandoned when it developed that only the wing of the Britannia would be useable without extensive modifications.

Pan Am. Comet Training In U. S. Seen Likely

Comet training for Pan American World Airways in the U. S. is being actively studied, despite statements from Pan Am that no arrangements have yet been made for bringing a Comet to this country. No difficulties would be posed by the CAA or the State Department, it is understood.

Cargo-carrying flights to Bermuda would be part of the expected program, which might be run in close cooperation with Panair do Brasil, Pan Am's associate company, which has four Comet II's on order for delivery in 1954.

Bell X-2 Explodes Over Lake Ontario

The Bell X-2 research plane exploded and disappeared over Lake Ontario, during tests preliminary to launching from its "mother" plane, a B-50. Missing after the accident were Bell test pilot "Skip" Ziegler and a crew member of the bomber, flight test engineer Frank Wolko.

A second model of the X-2 is well along toward completion, and the preflight testing program will be continued with it, although at a slower pace than previously expected. The first flight of the second X-2 will follow the completion of certain changes in the Wright XLR-25 rocket engine which powers it.

Funds for USAF Bases Cut by $155 Million

Construction work on 14 Air Force bases has been cancelled because of budget cuts. The cancellations, involving some $155 million, were announced shortly after a statement by Strategic Air Command chief Gen. Curtis E. LeMay to the effect that USAF bases are "saturated" with planes which would be jammed up for lack of room to move in case of an attack.

Largest item cut was a $46 million project for a strategic base at Portsmouth-Newington, N. H.

U. S. Team Evaluates French Jet Trainers

A U. S. Air Force evaluation team has just completed a ten day visit to the French flight test center at Bretigny where it was favorably impressed by tests of the Morane-Saulnier MS 755 Fleuret and the Fouga 170R Magister jet trainer.

U. S. Leads in Jet Race, Says Horner

In jet aircraft, "we not only pulled abreast of the British in the last two or three years, but in actual fact, we have passed them," according to H. Mansfield Horner, president of United Aircraft Corporation, who cited the combat record of the F-86 as evidence.

"We have in production at this time advanced American turbojets that are definitely ahead of any known foreign competitor . . . to which commercial air transports will fall heir," Horner told the Dallas chapter of the Society for Advancement of Management. He stressed the importance of an economical operation in the practical use of jet transports, and predicted that this would be the deciding factor in the long range struggle for supremacy in the transport market.

French Interest in Convertiplane Grows

A 22-passenger convertiplane is arousing considerable interest in French civil aviation circles. The aircraft is the SNCA du Sud-Ouest SO 1330, a projected development of the SO 1310 Farfadet, which started its flight tests on May 8.

A first model could be flying within two years if a government order is placed, as seems likely. The SO 1330 would use a three-bladed rotor driven by compressed air from the rotor blade tips.

PO Money: $2.8 Billion

The Post Office Department will have $2.8 billion for the coming fiscal year, as its part of the Treasury-Post Office Appropriations Bill which the House passed on a voice vote. Air transportation accounts for $139 million of the figure, out of a total of $574 million for all transportation expenses.

Pace to Canadian Post

Frank Pace, Jr., former Secretary of the Army and onetime director of the Budget Bureau, has been elected vice chairman of the Board of Canadair, Ltd., as well as to the board and to the post of executive vice president of General Dynamics Corp.

Central African to Buy Three Super Connies

Central African Airways has asked the Central African Air Authority for permission to buy three Lockheed Super Constellations, for delivery in February, 1955. The carrier would charter three L-749A's until delivery of the 1049's.

Over 100,000 Employed In Air Transport

For the first time in history, employment in the air transport industry reached the 100,000 mark in January of this year, and went over the top in February, when 100,500 people were on air carriers' payrolls, according to the Bureau of Labor Statistics reports.

In the aircraft production field, an average of 641,600 were employed in 1952, of whom almost 470,000 were classified as production workers. During the previous year the comparable figures had been 463,600 and 342,000 respectively.

Dallas-Fort Worth Fight Goes On

Texas, sometimes associated with large dimensions, has, in Amon Carter Field, a large airport. To supplement it Fort Worth and Dallas have a large feud. Observers who thought that the recent opening of the one might put an end to the other have been disillusioned to note that within three weeks of the field's opening:

- **The Dallas Chamber of Commerce** hired a law firm (Lord, Day & Lord, of Washington and New York) to seek an adjustment of the "lopsided division of American Airlines' schedules" between the new field and Dallas' Love Field;
- **The city of Grand Prairie** (population: 26,000) annexed 68 square miles fringing the field. Fort Worth suspected that zoning might soon follow, with flight over zoned areas prohibited. Grand Prairie denied it;
- **Maury Hoffman,** executive director of Fort Worth Air Terminal, Inc., claimed that passengers could get from Amon Carter Field to downtown Dallas 10 minutes faster than they could from Love Field, thanks to motorized baggage carts at the former.

Hopkins Takes Over At Convair

John Jay Hopkins has officially taken over from Floyd B. Odlum as board chairman of Consolidated Vultee Corp. as Hopkins' General Dynamics Corp. consummated its acquisition of 400,000 shares of Convair common stock from Odlum's Atlas Corp. Atlas retains 30,300 shares of Convair stock and becomes the second largest Convair stockholder.

Odlum officially revealed that Convair is developing "the first truly supersonic long range bomber" (B-58 Hustler) for production at Ft. Worth after the B-36 phases out there.

Subsidy Up Slightly

U. S. domestic and international airlines will receive $56.3 million in service mail pay during fiscal 1954 and $79.6 million in subsidy, the CAB estimates. In fiscal 1953 the totals were $53.5 and $79.3 million, respectively.

P&W to Hire 4000

Hiring of 4000 new employes and a reorganization of its main plant at East Hartford, Conn., are two moves scheduled by Pratt & Whitney Aircraft to speed up J57 jet engine production. The company is building three jet engines and three piston engines.

Airlines to Discuss Use of Andrews AFB

Possible conversion of Andrews Air Force Base for joint military-commercial use as a second air terminal for Washington, D. C., is due for discussion at a May 27 meeting of the major scheduled airlines and CAA Administrator Fred B. Lee. Serious traffic problems are expected this fall at Washington National Airport if some alternate field is not put into operation.

Moves toward a new airport at Burke, Va., have bogged down, and use of Baltimore's Friendship Airport is seen as impractical.

Viscounts Ordered

Four Vickers Viscount turboprop transports have been ordered by Hunting Air Transport, a British independent, for use on coach service between England and Central Africa.

Glenn L. Martin Announces Retirement

Aviation's pioneer announced his retirement from all aircraft activities with the Glenn L. Martin Co., but indicated he will continue as a company director for an indefinite period. He was re-elected to the board at a stockholders meeting on May 15.

Viscount Data Revealed

Plans for the operation by Trans-Canada Air Lines of 15 Vickers Viscounts have been revealed by *The Canadian Air Line Pilot,* journal of the Canadian Air Line Pilots Association. Cruising speed will be about 290 mph at 20,000 feet, with fuel consumption at approximately 250 gallons per hour. Deliveries begin September, 1954.

CAA Prepares for Transport 'Copters

The Civil Aeronautics Administration is preparing now for transport helicopter operations, according to Administrator Fred B. Lee. The Air Navigation Development Board is evaluating navigation and landing aids; a program is under way for the development of heliport standards; and the CAA is working with the CAB in preparing a new Part 46 of the Civil Air Regulations to cover operating rules for scheduled helicopter air carriers.

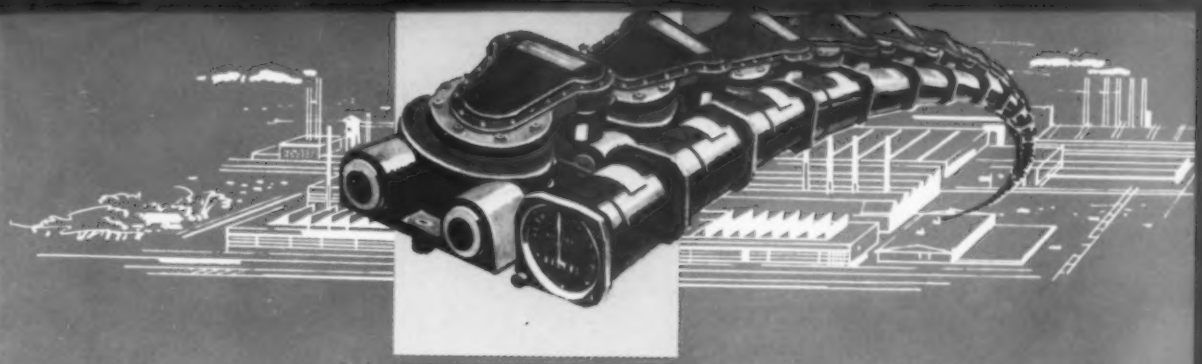
U. S. Agent Named

Aircraft Equipment Corp. is reported to have been named U. S. procurement agent for the AG fur Luftverkehrsbedarf, the German company which is paving the way for the re-establishment of Deutsche Lufthansa, the German-flag airline.

CAA Airways Groups to be Consolidated

Latest CAA reorganization move at deadline calls for consolidation of the Office of Federal Airways Establishment Engineering and Maintenance Engineering activities into a single division at a reported annual savings of $100,000.

New division will be headed by Peter Caporale, formerly chief of the Establishment Engineering Division. Deputy chief will be Henry I. Metz, ex-chief of the Maintenance Engineering Division.



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